40 Rock Rd

# POPULAR Computing WEEKLY

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Vol 5 No 21

# Spectrum clones to be imported?

**● Spectrum compatible machines may be about to be brought into the UK**

**● Sinclair export distributor MCI won't comment, but promises an announcement soon.**

*Full details below and inside*

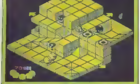
MCI, the company which became the leading export distributor of Sinclair products immediately prior to Amstrad's Sinclair deal is currently searching for stocks of Sinclair machines. It is thought MCI could be about to import the Brazilian Micro Digital Spectrum compatible machine but the company would not comment specifically on this matter.

Although MCI was until the crash purely involved in export of Sinclair products a spokesman would neither con-

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## SPECIAL SUPPLEMENT THE SPECTRUM

- Word processing
- Spectrum 128 – specific software
- Exclusive review – Bobby Bearing from The Edge (below)



## COLOUR FEATURE

Time Bandit on Atari 520ST



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- Shogun and Dan Dare games on the way

# May 22-28

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ABC

**How to submit articles** Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work

# Amstrad offloads its 48K Spectrum stocks overseas

AMSTRAD has succeeded in selling its surplus stocks of Sinclair machines to export house PST The stocks involved are thought to be 20 000 QLs 17 000 48K Spectrums and 14 000 16K Spectrums leaving Amstrad with only the Spectrum Plus and the Spectrum 128 for sale in the UK

PST is said to have paid £2 6m for the 51 000 machines – this averages out at £50 per unit, but considering the relative unsaleability of the 16K and 48K Spectrums in this country the unit price of these must have been much less It is in any event, a condition of the deal with Amstrad that PST sells the machines outside the UK

The Plus – now minus a stable-male

Although the deal leaves Amstrad free to maintain the price of the Plus and 128 pending the launch of the Amstrad version of the Spectrum in September it does nothing to help Sinclair dealers here who have been experiencing supply problems with Sinclair machines and with Sinclair published software

"Alan Sugar has built up a lot of enmity for himself," said one dealer, who didn't wish to be named "I want to buy QL software, but I'm told the person he's sold it to has been instructed to sell out of the UK This makes it difficult for smaller dealers to get hold of machines – particularly QLs – and well nigh impossible for them to obtain any of the software that was published by Sinclair

Some of the software houses involved in Sinclair publishing deals are now sorting out a return to solo publishing but it's still likely to be a month or so before the supply situation is sorted out.

Repairs to Sinclair machines are also a problem as Amstrad is insisting that users take faulty Sinclairs back to the original dealer and is then charging dealers for the repairs done This is likely to discourage dealers from returning machines for repair and will therefore, make it more difficult for customers to have faults corrected

# Tape levy slammed

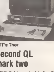
THE Government's plans for a 10 per cent levy on the retail price of blank audio tapes has come under fire from the tape manufacturers and – less predictably – the software industry

Guild of Software Houses (GOSH) chairman Mike Meek said he couldn't comment in his GOSH capacity until after a meeting on the subject later this month but said that he personally opposed the levy

It's almost a licence to copy – and I wouldn't like such a licence to exist for the software trade he said

The levy is intended to take a share of the sales revenue of the tape manufacturers and give it to the music and software companies, but a large slice of this revenue will go on administration fees, and as the software industry is much smaller than the music industry, Meek's fear is that little or no money will come through

His alternative proposal is to attack piracy at source rather than give people a licence to copy Software piracy is very definitely against the law and we should therefore be prosecuting the pirates '



CST's Thor

## Second QL mark two

TONY Tebby's rival to the Thor (see review page 19) now exists in prototype form, although it is far from being a saleable QL mark 2

Tebby has completed a circuit board design which will operate with QL Rom chips but the machine still awaits keyboard disc and various interfaces The machine is intended for Autumn launch at £499, but further development of the 68000 system depends on further finance for the project

Meanwhile it appears that a third Son of QL machine is being moeted by QL add-on auppiler Sandy

# Spectrum clones imported?

◀ continued from page 1

firm nor deny suggestions that it was about to reverse the process and bring machines back into the UK He did say however that an announcement was due in the next few weeks

The new distributor arrangements at Amstrad have meant that a number of companies previously involved with Sinclair have been left out in the cold (see separate story) This has fuelled speculation that some of them will be involved in the production of Spectrum compatible machines along the lines of Micro Digital's Although a surge of compatibles would follow in the tradition of the IBM PC which spawned a host of imitators a Spectrum compatible begs a number of questions that don't apply to the PC

Disc-based machines like the PC can be compatible with one another because their onboard BIOS is relatively small, and the operating system can be licensed from software houses such as Microsoft The Spectrum however needs to have full-blown operating system on board and the original is now owned by Amstrad

In addition much Spectrum software uses Rom calls and it would be difficult to get it to work on a compatible without infringing Amstrad's copyright.

# Is Sinclair's Loki fated to stay in Limbo?

THE Loki Super Spectrum games machine under development at Sinclair Research immediately prior to Amstrad's purchase of the rights to Sinclair machines stands little if any chance of seeing the light of day

The Loki was intended to have 128K of Ram, and would use a souped-up version of the Z80 processor running at 7MHz plus two custom chips and dual ported Ram (allowing two things to access it at once) in order to speed it up The intention was to produce the machine as a £200 version of the amiga and the blueprint is now in Amstrad's hands However, it is thought that the project was not very advanced at Sinclair

According to one Amstrad insider however Amstrad has no intention of doing anything with the machine and the sums involved in producing the Loki would be too great for anyone but Amstrad – even if Amstrad's agreement could be obtained – to produce it

The problems involved are based on the twin custom chips and the wealth of I/O connections, which consist of practically anything you'd ever want on a micro

The custom chips require a heavy financial commitment in terms of development while the I/O ports if they can be included for £200 at all would require massive sales

'It could work but it would have required Sinclair to put in a lot of investment', says Spectrum expert Andy Pennell He feels that the custom chips and dual ported Ram would allow the machine to run fast despite the relatively slow processor but suggests that the complexity of the project would probably have meant Sinclair killing it in the end anyway

The MTX 500 – due for rescue?

## Memotech rescue plan due to be finalised this week

AN announcement on the future of Memotech was expected as *Popular Computing Weekly* went to press

The company is currently in liquidation, but Geoff Boyd one of Memotech's original founders, has formed a new company Memotech Computers with a view to continuing production of the company's MTX series of machines

A spokesman for the new company said that pending a meeting to be held this week he couldn't confirm what Boyd's plans were but Memotech Computers is thought to be negotiating the purchase of Memotech's assets

In addition to the MTX series of microcomputers these will probably include the new Memotech machine currently under development

## Shogun's to show, but Dan still suffers delays

IF you thought that the *Shogun* and *Dan Dare* games were just a figment of Virgin's imagination think again

The two long-awaited titles are now nearing completion and *Shogun* at least, is scheduled for release at the end of this month

*Shogun* will be available for Amstrad and Commodore machines and involves you, as any one of a number of characters gathering loyal followers in order to become shogun of ancient Japan The game will cost £9 95 on cassette, £12 95 on Commodore disc and £14 95 on Amstrad disc

*Dan Dare* is being programmed on Spectrum Commodore and Amstrad machines but Virgin has not decided on a release date yet, and may hold it back until the autumn On the Spectrum, *Dan Dare* will be a graphically sophisticated arcade game on the Commodore, a 'no-text' adventure, with the Amstrad version offering more in the way of a mainstream arcade adventures

### Kuma produces a guide to the ST

KVMA *Computers* has produced its first book on the Atari GT, *The Atari ST Explored*, by John Braga. Topics covered include Gem, TOS, the ST's BIOS and Logo A guide to 68000 assembly code is also included along with details of system variables

There are also chapters linking the machine to peripherals The book is available now price £8 95

A graphic e/a kit may join the 128.

## Commodore grabs De luxe packs from Ariolasoft

COMMODORE has hijacked Electronic Arts' *Deluxe* range of programs for the Amiga from Ariolasoft and is to offer them bundled with the Amiga Ariolasoft announced the release of *Deluxe Video Paint* and *Print* in this country at the end of March before the Amiga was even launched here Commodore, however, seems to have outbid the company

'The contract with Electronic Arts allows them the option of doing OEM products over a certain amount', said an Ariolasoft spokeswoman, and the *Deluxe* products fall into this category' Ariolasoft will, however, continue to sell Electronic Arts' entertainment software

Commodore UK's acting general manager Chris Kaday wouldn't confirm the bundling deal but said there would be an announcement shortly He also refused to comment on suggestions that the repackaged Commodore 64 (see *Popular Computing Weekly*, 15-21 May 1986) would include a Rom-based version of Berkeley Software's Geos graphic operating system 'I can't deny we're looking at options' he said and there may well be future developments to the system

# Product News



## Prospero produces Pascal and Fortran for ST series

TWO MORE language implementations have been announced for the Atari ST range of 68000 processor-based microcomputers Prospero Software has launched Pro Pascal and Pro-Fortran-77 both compiled ANSI standard versions.

Both languages offer full support for GEM and ST graphics allowing programmers to create stand-alone applications conforming to the GEM standard Both are priced at £148

Details from Prospero Software, 190 Castlenav London SW13 9DH (01 741 8531)

## Tasman gets set for PCW word processing package

TASMAN SOFTWARE is to launch a PCW8256 and 512 version of its Tasword word processing program at next month's Amstrad show The new version will be called Tasword 8000 will have a 90 × 32 character screen and Two fonts and will sell for £24 95

Details from Tasman Software, Springfield House, Hyde Terrace, Leeds LS2 9LN (0532 438301)

## Hisoft C's niche for new compiler

HISOFT has released HiSoft C 1 3 a new version of its Spectrum C compiler Version 1 3 is smaller allowing larger programs to be compiled, and runs around 25 per cent faster than the previous version It also includes a code optimiser which makes compiled programs smaller and faster and has more Unix System 3 library functions added These allow Spectrum C programs to be ported across to other machines running HiSoft compilers fairly easily

Details from HiSoft 180 High Street North Dunstable Beds LU6 1AT (0582 696421)

## MicroPro gives Astron business support

BUSINESS software publisher MicroPro is launching SuperScript its word processing package for the Commodore 64 and 128 on Astron Rom card in July

The company will be selling the credit card sized Astron card together with manual and an adaptor to plug into the micro's I/O port for under £100 Upgrades will be available for existing SuperScript users

Details from MicroPro UK, Haygarth House 28-31 High St, London SW19 5BY (01 879 1122)

## Seven Stars launches NLQ printer driver

QUALITAS is a printer driver utility from Seven Stars that allows Tasword to print in near letter quality (NLQ) on printers compatible with the Epson RX80

Five fonts are supplied and these can be redesigned using the font editor supplied in the packages allowing foreign accenting or even non-Roman alphabets to be designed

The package uses two passes of the printhead with quadruple density graphics plus micro linefeeds to achieve NLQ

The Tasword 2 version is out now price £7 95, while the Tasword 3 model will be available in June price £8 95

Details from Seven Stars Publishing 34 Squirrel Rise Marlow Bucks SL7 3PN

# DIARY DATES

## MAY

31 May
**Dragon Computer Show**
Ossett Town Hall, Yorkshire
**Details:** Hardware and software support for the Dragon.
**Organiser:** John Penn, 04203 5870

## JUNE

10-12 June
**Comdex International in Europe**
Nice France
**Details:** Business exhibition covering computers printers peripherals and software. Trade only
**Organiser** Interface Group 01-734 7282.

13-15 June
**The Amstrad Computer Show**
Novotel, London
**Details.** Hardware, software and peripherals for Amstrad micros.
**Price** £3 adults £2 children, £1 discount for advance sales
**Organiser:** Database Publications 061 456 8383

24-26 June
**Computer '86**
G-Mex Exhibition Centre, Manchester
**Details:** Business and industry computer show, formerly known as the Northern Computer Show
**Price:** Free entry by business registration
**Organiser** Reed Exhibitions, 01-643 8040

## JULY

16-18 July
**PC User Show**
Olympia, London
**Details.** Hardware and software for IBM machines and their compatibles.
**Organiser:** EMAP 01-608 1161

24-27 July
**Acorn User Exhibition**
Barbican Centre, London
**Details:** Hardware, software and peripherals for the Electron, BBC micro and Master machines. Trade only 10am-1pm on 24 July
**Price** £3 adults, £2 children £1 discount for advance sales
**Organiser** Editionscheme, 01 349 4667

## SEPTEMBER

3-7 September
**Personal Computer World Show**
Olympia, London
**Details** Software and hardware for home educational and business computer users.
**Price.** £2.
**Organiser** Montbuild, 01-487 5831

13-14 September
**Commodore Horizons Show**
UMIST, Manchester
**Details:** Commodore hardware software and peripherals
**Price** £3 adults, £2 children £1 discount for advance booking
**Organiser** Database Publications 061 456 8383

26-28 September
**Electron and BBC Micro User Show**
**Details** Software hardware and peripherals for the Electron BBC micro and Master machines.
**Price** £3 adults £2 children, £1 discount for advance booking
**Organiser** Database Publications, 061 456 8383

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alternations to show arrangements made by the organiser


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# Letters

## An interest

Thank you for the nice reviews of our products in your 8 May issue Education Supplement It is very pleasing to see the popular computer press taking an interest in educational software

*David Atherton*
*Software Manager*
*BBC Publications*

## Unfair criticism

Since I started the correspondence concerning bugs in Atari ST Basic perhaps I might be allowed to reply to Mr Rosenvold s defence of the machine (Letters 8th May)

Although not disputing that the Atari Basic is so badly flawed as to be unusable Mr Rosenvold says that criticism is fundamentally wrong' because the machine can run better languages such as Pascal or Forth If Mr Rosenvold prefers these he is entitled to his view but most purchasers will expect to be able to use the powerful Basic supplied with the Atari Fancy buying a new car only to find that it doesn t work because of incurable faults with its powerful petrol engine and that you are expected to go out and buy a diesel engine!

Mr Rosenvold is most fortunate in getting the right answer every time when running Mr Hewsons's program, I get the wrong one more often than not, and Atari have told me that the bug which causes this is present in every machine The criticism of Mr Hewson's programming style is both unfair and misplaced Unfair because the form was probably only adopted as the simplest means of demonstrating the fault and misplaced because the use of string variables is not only permissible but indeed, with random file handling, the only method possible

*David Loversed*
*Bramhall*
*Stockport*

## Delayed service

Spectrum owners are not the only ones having trouble with repair delays My five month old CPC 464 recently went to be repaired under guarantee, and came back seven weeks and three days later

That s not good enough A spin dryer costing around a quarter as much again was repaired under guarantee the next day and it didn t have to be carted miles

The sooner the industry gets some form of service contract going (as with domestic items), the better

*F E Lane*
*Wootton Bassett*
*Wilts*

Star Letter

## A difference

Can I bring to the attention of your readers a new computer user group – but one with a difference

The Spectrum Unemployed User Group is for Spectrum owners who are currently unemployed Membership is free and in addition to help with computer problems (and in dealing with the DHSS) we publish a monthly tape-based magazine containing games and utility programs

The only cost is postage for the magazine and 5p to cover the production costs Please not that membership is open only to the unemployed If members find a jod we throw them out

Anyone interested should write to the address below

*M Sleight*
*Spectrum Unemployed User Group*
*109 The Avenue*
*Bentley*
*Doncaster DN5 0PS*

**Sounds like a good idea but why only Spectrum owners? There must be plenty of other computer owners in the same position**

## Ultimate Basic

I have two points to make following articles and letters in your magazine

1 If Jack Tramiel intends pushing his ST machines into the educational market he must first rewrite a new Basic, He should learn a lesson from the IS Basic on the Enterprise computer which is widely regarded as the ultimate Basic amongst reviewers His Basic contains little of the features needed to make a good structured program with good use of the machine's flexibility Enterprise has

2 I was amazed when I read the editor s reply to A D Ponting's letter in issue No 19 It says "we cannot print articles for which we have no copy" I recently had a program sent back from your reviewer with a letter saying, "I ve been hanging on to this to see if there d be any demand for Enterprise listings – alas not Proof that you do receive copy

Can I assure the computer industry that a demand does exist in greater numbers than you would expect Also I d like other computer manufacturers to learn from Enterprise in how to treat and give service to their customers

*Chris Moore*
*Dartmouth*
*Devon*

## User group

I am starting a user group for Electron owners and would be grateful if you could publish my full address so that potential members can contact me

While based in Cheshire, I would welcome enquires from

# Puzzle

**Puzzle No 209**

Take a piece of card and cut out two circles one slightly larger than the other Now draw equally spaced radii to divide the discs into one hundred sectors Using a fastener through the centres of both discs fasten the smaller disc on top of the larger so that it can rotate freely

Each of the sectors on the smaller disc should be numbered from 00 to 99 in sequence in a clockwise direction Similarly the larger disc should also be numbered but in an *anticlockwise* direction

The diagram shows a part of such an arrangement. At any given setting the discs will display 100 numbers For example, those shown in the diagram are 9803 9902, 0001, 0199, 0298 0397, etc By rotating the smaller disc to each of the 100 positions different sequences of numbers will be generated

At what position should the disc be set in order to produce the maximum number of primes? For your answer please state which number on the *outer* disc should be adjacent to the 00 on the inner disc and state the number of prime so obtained

(Note that the value 1 is considered prime in this puzzle )

**Solution to Puzzle 204**

In carrying out the operation as described the most primes are produced when the top card is 91 In this case 24 out of the 100 numbers will be prime

The program tests each of the 100 possibilities which result with the different start positions in the pack Each successive total is summed and is tested to determine if it is prime in the subroutine (lines 500 to 560) As each prime is encountered the array variable whose subscript corresponds to the start value of the pack, is incremented by one

At the end of execution of the program the array is scanned to determine the number of primes obtainable with each run-through of the pack

**Winner of Puzzle No 204**

The winner is Martin Fisher of Marston Moreteyne, Beds who will receive £10

**Rules**

The closing date for Puzzle No 209 is 17 June

anywhere, as the group will be postal There are no fees the idea being to encourage contact and help between members I will probably produce a cheap but informative newsletter to which members will contribute

Finally, could I ask that enquirers enclose a stamped addressed envelope for a reply.

*Michael O'Donnell*
*5 Worthington Close*
*Runcorn*
*Cheshire*
*WA7 2QG*

## Still waiting

I K Sanders of Worcs and D Scott of Hawick think they ve got problems with their Spectrums now that Alan Sugar has taken over, then mine beats the lot

Last January I ordered a new casing for my 464 I sent my postal order for the amount agreed and waited and waited I have rung them several times and variously been told that it's on its way that it's out of stock that a shipment was expected, it might be on the next shipment.

I have now written to them and I am still waiting

*P Clarke*
*Sneinton*
*Nottingham*

## Strange excuses

Some strange excuses have been put forward for computer design faults but that offered by Kristian Rosenvold in respect of the problem with the Atari ST – Basic is only provided so that you will buy the machine you aren t expected to actually use it – must be the most outrageous yet

Norway has perhaps been singled out for special versions of the Atari, because I have run Mr Howson s program on all the 520s I could find on dealers shelves, and they all give the wrong answer on the second and subsequent iterations

Mr Rosenvold is however quite right that string variables take longer to process with the wholly numeric version of the program listed below the Atari is much faster at getting the wrong answer However it is still very slow – further checks with a counting loop added showed that the Amstrad PCW ran ten times as fast (and got the right answer)

*So Thor Odin and Loki aren t members of Abba after all!*

```
10  deldbl a b
20  a  99990999939 b = a
30  open"O" 1 "test" print#1
    a close
40  open"I" 1 "test" input#1
    a,close
50  print a b
```

*P Cuthbert*
*Cambridge*

PS It would be unfair to dealers if everyone went round trying display models to see what answer the Atari comes up with – it gives minus 8192

## Star letters

**Every week *Popular Computing Weekly* offers prizes for Star letters The most intelligent, pertinent, helpful, or simply interesting item in our postbag each week will win the writer a free year's supply of exclusive *Popular Computing Weekly* binders**

**Here is your chance to clear up that pile of old *Populars* under the bed and file them neatly, so get writing today**

**Send your thoughts to Letters, *Popular Computing Weekly*, 12-13 Little Newport Street London WC2H 7PP**

# Thor – god of thunder?

*John Lettice takes a close look at CST's Thor micro, based on QL technology, and evaluates its chances of success*

Rumours of the death of the QL were, it would seem greatly exaggerated A few weeks back even as Alan Sugar was knocking the machine firmly on the head work on its successor was in progress

Son of QL produced by Stevenage-based QL add-on manufacturer CST, now exists in prototype and is scheduled for launch at the *Personal Computer World* show, in September

The machine is the Thor and it will be available in two basic versions, one sporting a single 720K floppy and costing £550 and the second equipped with one floppy and one 20Mb hard disc for £1 300 The casing of the machines has been subject to a radical redesign, and now houses a wealth of I/O slots along with the original QL circuit board Microdrives are conspicuous by their absence

The Thor is actually the QL mark two – the machine that has been subject to Sinclair s on-off plans for the QL s successor

This project was repeatedly cancelled and re-adopted in the year prior to Sinclair s sale to Amstrad but while its future with Sinclair was never certain, CST to which Sinclair had subcontracted the development work continued work on the machine that was to become the Thor

Thor is essentially a radical repackaging of the QL It consists of a compact steel box housing main circuit board Ram expansion to 640K ports for the QL s standard I/O plus Centronics and mouse ports Production machines will also sport four Rom slots internally

The disc drives and interfaces are housed in the front right hand side of the box – the whole shebang is decidedly full up and crowded but the QL s expansion bus has been re-routed round to the back and really serious expandaholics will be able to buy an expansion box to plug into it from CST

## New keyboard

The keyboard is one of the more interesting points about the current prototype Sinclair s wobbly Scandinavian designed keys have been thrown out of the window (CST s neighbours will be complaining about the mess in the back garden if the Thor really takes off) and have been replaced by one compatible with the IBM PC AT.

The layout of this differs from the QL layout, but most of the IBM-specific keys have been wired in, and the rest will be dealt with on the production machines These will include IBM s *Print Screen* key which will actually have a screen dump routine patched into it rather than simply dumping the characters from the screen as it does on IBM machines

The feel of the keyboard is streets ahead of the standard Sinclair feel and although I personally didn t feel it matched the classiest of IBM compatibles it s still good and at this level feel is largely a matter of taste

Because the Thor is still essentially a QL there should be no problem with running software – provided it s on a 3½ inch disc that is

David Oliver of CST says he s been looking at the Microdrive transfer problem and proposes to operate some kind of data transfer facility for users who are upgrading their machines

Program software is a little trickier firstly because it may be protected and secondly because copying it from microdrive to disc is illegal but CST will be asking software houses for some kind of blanket permission to transfer programs and the incentive should be there

The company has some ammunition that should help it secure this permission in the shape of water marking of machines

This will be analogous to a dongle in many respects Each machine will have its own individual code number which will be transferred to applications software discs before the application can be used

Individual disc programs can therefore only be used by the machine they were installed for – or to be more precise one machine in 256 – and there s therefore no need for further copy protection Users can therefore take as many backup copies as they like because they'll only work on their machine

CST also intends to put window/icon software on the machine to run with the mouse This wasn t installed on the machine I saw but marks a change from Sinclair s earlier resistance to the idea of windowing front ends

## Multitasking



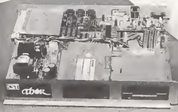
It may seem illogical for CST to develop its own system when Digital Research's Gem which runs on the Atari ST is available off the peg but Oliver points out that Gem currently won t multi task and that it s important that the QL s multitasking capability is maintained both from the point of view of existing users and from the point of view of future developers

But CST isn t ignoring the ST altogether and is considering development of some kind of emulator allowing the Thor to run some Atari software

The Thor s status is slightly confusing in that it s part new machine and part upgrade

CST will be offering it as an upgrade to existing QL users but will also want to produce complete units for new purchasers both corporate and individuals sever-

Inside the Thor – the circuit board






The Thor system – note the new keyboard

al of whom already exist

Oliver says he's already been approached by both individuals and organisations, one Eastern Bloc would-be purchaser in particular, is making noises about 20 000 units over five years. The latter's chances of getting a hi-tech machine like the QL through export controls are, it must be admitted somewhat dubious, but the request is an indication that CST's eventual procuction target of 1 000 machines a month errs if anything on the modest side

## Circuit board supply

But where are the circuit boards to come from? CST needs to get its hands on a steady supply of these and Amstrad, which gives the impression of preferring export to Rockall to discount in Dixons as a fate for the QL, isn't a likely source. CST however says it has identified a source willing and able to supply circuit boards for the foreseeable future and says this source isn't subject to any right of veto by Amstrad

The next step for CST the QL mark three, is already being planned. This should appear in 1987 and will use the Motorola 68020 processor which is the fully 32-bit version of the QL's 68008. It will almost certainly incorporate hard discs as CST predicts price reductions in this even in the next year or so

This variant sounds very much like the QL the world briefly thought Sinclair had launched two years ago

Its hardware will incorporate multitasking, which means text windows won't be overwritten by other windows and will all remain active changing even when they aren't on view and will initially incorporate 1Mb of Ram made up of 256K chips

The sockets for these, however will be wired to accept 1Mb chips so although the first machines will be able to have a mere 4Mb of Ram on board fitting 1Mb chips will allow you a much roomier 16Mb

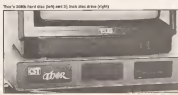
## Will it succeed?

Because the multitasking will be hardware rather than software the system software will also be upgraded to produce much more sophisticated windowing then on the current Thor

But will it succeed? When the original QL was launched in 1984 many people including myself, pegged it as the next micro breakthrough

Its conspicuous failure to shape up as the world-dominating micro we thought it would be in the intervening period surely proves that it was after all a daft idea, best dead best forgotten

Thor's 20Mb hard disc (left) and 3½ inch disc drive (right)




We've all been a little sensitive about earth-shattering wonder machines since that particular debacle

That's one way of looking at it. But look at the way the micro market has gone since then, with the launch of 68000-based machines like the Atari ST and Amiga, and think a little about where the software and hardware support is going to be over the next couple of years

There's now so much 68000 experience around that any half-way decent machine based on this processor and selling for a reasonable price stands some chance of carving out a section of the market for itself, now that the programme are there

## Magic in the name

Now think about the QL. It hasn't achieved the success of the 64, the Spectrum or the Amstrads but it has a decent sized user base and the magic of the Sinclair name (if somewhat faded now) means that it still has the support of many competent hardware and software support companies

The QL is therefore at the right price and with the right amendments, poised to take advantage both of existing support and of the impending 68000 boom. Now it would probably be just plain foolhardy to expect the QL in any form to sell 500,000 units at this stage in its life which is why Amstrad isn't interested, but although Sinclair probably thought ruefully that 50 000 units over two years is pretty small potatoes, volume sales do not necessarily a successful machine make

CST accepts this and is gearing its production to cater for a small but steady number of sales

No way has the company either the resources or the inclination to start making Tramielish noises about world domination but because of its experience producing low runs of add-ons it is actually well placed to make a success of only a moderate one, of the Thor

*Thor is planned for launch at the PCW show in September at the prices quoted above. CST can be contacted at 24 Green Street Stevenage (0438 352150)*

**John Lettice**

# Plenty of features, facilities and options

There have been so many machine code development systems consisting of no more than a simple assembler and monitor that it's a pleasure to find a product truly deserving of the title

*Laser Genius* is the latest from Ocean's IQ range, developed by Oasis Software of White Lightning/*Laser Basic* fame *Laser Genius* originally started life as Oasis' own in-house programming tool so it was written specifically for professional use – and it shows

In terms of features facilities and options *Laser Genius* is flawless It comes as two programs, although it can be thought of as three modules – assembler monitor and analyser

The first program is the assembler/monitor This includes a first-class editor featuring auto-number renumber, find, and search-and-replace functions The assembler is a full, two-pass macro assembler, and source files can be assembled in memory or to disc/tape If the latter option is chosen separate files can be linked and assembled

Having the monitor co-resident in memory is ideal as it allows you to examine memory, move or compare blocks and so on This makes machine-code programming a good deal more interactive than is usual

The assembler supports 14-character labels which makes programming a delight since you can use labels like Screenbase and Commandloop instead of Scrnbse and Loop1 for example With sensible and widespread labelling *Laser Genius* turns assembler into something approaching a high-level language

This impression is reinforced by some of the other features, notably the macro support, the ability to merge previously debugged subroutines and conditional assembly

The monitor/analyser is a dream In addition to standard monitor features the analyser greatly simplifies the debugging of your programs

The screen is split into four windows showing all 6502 registers, a disassembly of your program together with the analyser stack, a memory dump in hex and ASCII and a command window showing your commands and analyser messages

The analyser itself is a Forth-based program with too many features to discuss here However it allows you to do an automatic slow run of your program or single step with or without trace Multiple stop conditions can be set to allow the examination of registers and memory locations

If there had to be one criticism it would be the documentation Although it's comprehensive in the sense of a reference guide I'd have loved a 'walk through', one example program demonstrating the editor and assembler through to saving and examining the subsequent object code The analyser, perhaps because it's different, is treated in this helpful way

That aside *Laser Genius* lives up to its name Obviously something this complex is not going to be mastered in a few hours, but once you've got the hang of it it will do everything but write your programs

Anyone who is serious about machine-code programming on the 64 should rush out and grab a copy

**Peter Worlock**

**Program** *Laser Genius* **Micro** Commodore 64 **Price** £19 95 (disc) £14 95 (cassette) **Supplier** Ocean 6 Central Street, Manchester M2 5NS

# Organised finances

Well, now you've got your Psion Organiser II, you might as well attempt to get your finances organised At least that is the aim of Psion's *Finance Pack* for the Organiser II (both CM and XL models)

The package consists of a Datapak containing the finance programs which simply slides into one of the drive slots and on power up, a new item, *Fins*, appears on the options menu On selecting this you are presented with a sub-menu from which you can select the following seven functions expenses, bank, NPV, IRR, compound interest, bond, mortgage and APR

Of those seven maybe only three or four are going to be of everyday use (net present value, internal rate of return and redemption rates of corporate gilts are not generally things you'd come across this side of Threadneedle St)

The expenses option is obviously going straight for the middle management niche – it allows you to enter and date business expenses under different categories (meals, travel petrol etc) into your Organiser

The bank option on the other hand, could be of more genuine use This lets you set up a complete record of all your banking transactions – and it's got quite a few nice touches Cheque numbers are automatically incremented as you enter them and as with expenses you can enter a short text description Standing orders are automatically dealt with, via access to the system clock If kept up to date, this program will give you an immediate theoretical balance reading

Psion recommends that the bank files are kept on Datapak – and that a 32K pack should hold about three years worth of transactions Note however that there is no kind of security at all on these files

If you already own an Organiser II and are using it for your phone numbers, then it might be worth the money to add these extra features to your machine But, this package is not reason enough alone to make the purchase

**John Cook**

**Progrem** *Finance Pack* **Micro** Psion Organiser II **Price** £29 99 **Supplier** Psion Ltd, Psion House Harcourt Street, London W1H 1DT

# Green fingers

Now that summer is here with the usual dodgy weather it's time to come in from the garden and put your computer to good use *The Planter's Guide* from Phoenix Publishing is a database of plants, complete with soil and light conditions The program is menu-driven, and the initial menu offers the options of searching for a plant (heather, conifer, shrub or climber) to suit the conditions in your chosen spot, or the conditions to suit your chosen plant Once the database has found all the plants that will fit the parameters, the user may flip through the selection

The accompanying booklet runs to 130 pages of about ten entries on each page (though a few pages are devoted to very useful information on planting, soil testing and so on) – it is to these entries that the user is referred (don't lose the book because no on-screen references are made to the plant names)

An endearing feature of this friendly and easy-to-use program is that the authors have not protected the listing from perusal, thus allowing the user to alter the program to taste or save it to disc It is a pity however, that there is no easy way to add entries to the database Though the program is not as fast as, say *Masterfile*, it's quite adequate for the browsing gardener and should prove a very useful addition to the trowel and manure

**Tony Bridge**

**Program** *The Planter's Guide* **Micros** Amstrad, BBC, Spectrum Commodore (all on one tape) **Price** £14 95 **Supplier** Phoenix Publishing 14 Vernon Road, Bushey, Herts WD2 2JL

# Reach for the tranquillisers

Having run out of new kinds of games many software companies are now merging two or more existing types for their latest releases The *Psi-5 Trading Company* is one of these

Courtesy of Accolade/US Gold *Psi-5* is a hybrid of the old space shoot 'em up, a flight simulator, and a trading game, in which you play the part of the captain of an interstellar freighter

Your mission begins by selecting five crew members from 30 applicants to handle various shipboard functions like weapons, navigation engineering, repairs and scanning With crew in place, you load up a cargo, select a destination and head out for the wild (really wild) blue yonder

Your crew members have different strengths and weaknesses and some have a low boredom threshold so if you don t keep an eye on your weapons specialist he/she/it may start blasting friendlies for the hell of it.

You'll have your hands full just keeping track and issuing orders to the various departments making sure you don t slip behind schedule (your cargo will otherwise perish and you lose money)

When the hostiles arrive things really get interesting You must switch rapidly between scanning and weapons ranking targets in changing priorities and making sure you don t zap innocent bystanders (their governments sue for compensation)

As the screens start shaking under missile and blaster impacts, and various departments jam your communicator with incoming messages and as you have to start including damage control in your plans you'll find yourself stabbing the pause key and reaching for the tranquillisers

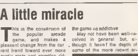
The graphics are wonderful and gameplay is fast and furious I don t know much about the trading aspect because I never once survived long enough to sell anything This would be one (minor) complaint – the easiest mission should provide a more encouraging introduction

The major complaint is about the documentation – it s lousy Not only is it sketchy on some fairly crucial aspects of play, it s printed in tiny type, made worse because it s printed dark blue on black US Gold should have their white sticks broken for this one

But if you like a game that will bend your mind to breaking point *Psi-5* is the one

**Peter Worlock**

**Program** *Psi-5 Trading Company* **Micro** Commodore 64 **Price** £9 95 (cassette) £14 95 (disc) **Supplier** US Gold Unit 10 Parkway Industrial Centre, Heneage St, Birmingham B7 4LY



# A little miracle

This is the conversion of the popular arcade game, and makes a pleasant change from the current trend toward ever more exotic plots and complex riddle-solving There s not much to the game set against beautifully-drawn backdrops depicting sights from around the world (nothing whatever to do with the action taking place in the foreground), the game is simple and refreshingly old-fashioned – avoid the usual alien blobs do your best to pick up the energy blobs and survive as long as possible while traversing the screen by the most score-producing route as possible

The only thing missing is your laser cannon-zapping is not the name of this game it s all down to reactions and will you need them! Your little figure must clear the screen of all the bombs there aren't many of them to a screen but they re not easy to get at. None of the screens is particularly exacting and the bombs can be cleared in any order – but there is a best way to handle each screen, and it is this that makes the game so addictive

May not have been well-received in general but, although it hasn t the depth of some of the more recent ar-



cade adventures, it is one of those little miracles which get loaded in to the computer at seven o clock on a Friday night – just after a long week s work when the eyes and mind want nothing more than to hand over to the joystick for a couple of hours Neat graphics good colour, lots of plink-plonk sound lots of high scoring great fun!

**Tony Bridge**

**Program** *Bombjack* **Micro** Amstrad CPCs **Price** £8 95 **Supplier** Elite Systems, Anchor House Anchor Road Walsall, West Midlands

# Three set points

Crumbs, it s almost Wimbledon time again – ah, the glorious sound of thwack of leather on willow no that s something else isn't it, rather, the thwang of furry individuals rushing around the court the obscenities uttered by the circuit stars

The latter can be simulated very realistically when it takes four attempts to load the game – for now it is *Tennis* by Bug Byte we are talking about.

This is definitely a cheapie, and for that I can forgive the flickering ball and relatively slow action

The game is one player only, in that you play against a variety of computer controlled opponents with silly names (that is you start off with Manuel Fawlty who nips around the court with considerably more skill than he ever waited at table down in Torquay )

Controls are simple (left/right, up/down fire) but there are the extra options to freeze the screen and switch off the music Other nice touches are the ball boys who zoom on and off court to pick up the stray shots I found myself quite enjoying *Tennis* If I could only find a way to balance the strawberries and cream on the keyboard

**John Cook**

**Program** *Tennis* **Micro** BBC B/Electron **Price** £2 99 **Supplier** Bug Byte Liberty House, 222 Regent Street, London W1R 7DB

# Fast, loud and awesome

In the fullness of time when the chips are down and everyone stands up to be counted and various ideas are run up the flagpole to see who salutes them the Vic 20 will probably be decided to have been a GOOD THING Archaic by today s standards, with its minute memory limited screen display and lack of sprites or sophisticated sound, it was nonetheless the first affordable colour, sound expandable home micro and a decent little games machine

Jeff Minter s *Viva Vic* collection, a compilation of the eight Llamasoft Vic games, underlines just how marvellous the Vic 20 must have appeared to owners of silent monochrome ZX-81 s and the like Minter's unique head-banging programming style ensures that these games are FAST LOUD and AWESOME – so don t throw that Vic out yet

*Andes Attack* is a jolly Defender clone with the appropriate amount of zapping and exploding *Traxx* a huge success in its day is one of those where you have to "paint" a screen by moving your tracer around a grid until all the squares are filled in while avoiding progressively faster malevolent weeblies

*Gridrunner* is a sort of 'Space Centipede" where droids, pods, energy bolts and X/Y zappers gang up on you in an unsurpassed extravaganza of blasting *Abductor* is an ingenious sort of non-scrolling Defender, in which you must defend humanoids from nasties using your plasma cannon *Laserzone* requires a unique form of hand-eye co-ordination to control two lasers on the x and y axes firing diagonally if necessary to wipe out the baddies while *Matrix* returns to the theme of *Gridrunner* with more skill levels and the addition of hallucinogenic cameloids

The superbly-titled *Metagalactic Llamas Battle at the End of Time* is another one with a tricky control method by which you must use a force shield to bounce your llama s energy-spit into the attacking spideroids

Lastly *Hell Gate* possibly the fastest and most mid-blowing zap game ever, in which things move so fast that you have to just react without thinking to co ordinate the fire of four gunships in wiping out hordes of muties Don t hit the goats!

Unmitigated fun, a wonderful history lesson (full notes are provided) and a bargain for any owners of Vics with 8K or 16K expansion Get it instantly

**Chris Jenkins**

**Program** *Viva Vic* **Micro** Vic 20 **Price** £6 50 **Supplier** Llamasoft, 49 Mount Pleasant, Tadley, Hants.

# Crime prevention

The desk sergeant was pretty well at the end of his tether It was a pity about the tether but frankly if I hadn t tied him up he d have been well away The local Conservative Association was shouting the station down after I d accidentally turned loose the Police Constable s Reserve (a fairly unreserved mob by all accounts) on their leafy suburb, while the shopkeepers around the football ground had some queries about my decision to control a 20 000 crowd with one police dog handler

'The trouble with you superintendent is that you re unreliable said the sergeant High praise this – my previous attempt at *The Force* had only netted me a rating of Incompetant

*The Force* is actually one of the most complicated strategy games around and has now been converted to the Spectrum from the Commodore You play the role of police superintendent of Middletown controlling four police stations each of which is further subdivided into four geographical areas.

You have a fixed amount of resources, consisting of beat officers cars dogs and horses at your disposal and you have to allocate these by area over three daily shifts – crime patterns vary depending on time of day – on a weekly basis In addition you have have the aforementioned Police Constable's Reserve – which fixes crime fast but ruins your popularity

Once you ve sorted this little lot out It s a case of sitting back advancing the time clock one week and watching events unfold You ll get a detailed picture of crimes you re currently observing and reports of major heists throughout Middletown, followed by an appraisal of your performance

Although the game can be entertaining once you ve got to grips with it, I m unsure about its addictive qualities as the screen displays are so complex and the time lag before anything actually happens so long that I suspect all but the most died in the wool strategy fan will lose interest.

But from a programming point of view *The Force* is nicely executed and if you are a strategy hard-case it will probably provide you with weeks of engaging frustration

**John Lettice**

**Program** *The Force* **Micro** Spectrum **Price** £8 95 **Supplier** Argus Press Software, Liberty House. 222 Regent Street, London W1R 7BD

# Electro-frazzle

Power up the 64 plug in your joystick and turn your brain off You re about to encounter *Ollo*

The scenario may sound a touch familiar fly your spaceship through the waves of enemy defenders to reach the planet surface, operating on the premise that anything that moves should be zapped

Flip the tape over, load side two, and you re confronted by a new scenario fly over the planet surface knocking out the defending ships and dodging the surface gun emplacements Here your strategy needs to be more sophisticated in that things that don t move should be zapped as well

Graphically *Ollo* is supremely adequate the sound is suitably electro-frazzle and the action is fast though not quite furious

If you re the kind of gameplayer who can get locked into deadly high-score combat with yourself *Ollo* will keep you happy for a while The rest of you can rest assured that you're not missing one of life s sublime experiences if you ignore it

**Peter Worlock**

**Program** *Ollo* **Micro** Commodore 64 **Price** £2 95 **Supplier** Bug-Byte, Liberty House, 222 Regent Street, London W1R 7DB



# Fast monsters on the Amstrad

*Tony Kendle makes a plea for tips for games on newer machines, and the Marsport solution takes shape*

I can t remember the last time I ever wrote about being captivated by a QL arcade game, indeed if I ever was It has taken a long time far too long for Sinclair s sake but the quality and frequency of QL programs is now ironically quite respectable sufficiently so to make the incredibly cheap offers in the High Street stores worth a second look.

The game that has caught my eye in particular is *3D Slime* which is like a cross between *Erburt* and *Marble Madness* but with a marvellously comical and cartoonlike piece of jumping slime as the main character It not only looks good for the QL but has just the right mix of addictiveness and challenge to make it a classic

Even so, the QL is most attractive for some simple dedicated use such as Basic programming or the Psion suite The only 68000 range machine that is really living up to its promised performance in this country is of course the Atari ST, and Rainbird software pioneer of state-of-the-art programming is promising some new arcade/simulations that will match the superb standard of releases such as the adventure *The Pawn* More details soon

In the meantime we are still waiting in vain for the first tips for ST games in the column

For instance *Brattacas* has been around for quite a time now and there must be lots to say – I would like to hear from any ST owners out there

## Infuriating bounder

It is impossible to avoid the question of games conversions these days Almost everything that comes out is released for several machines over a very short time This makes a lot of sense one lot of advertising covers all machines, it fits in well with the team design philosophy of many large companies – it is often easier to program a game than it is to come up with good ideas – and there is often only one set of independent reviews I wouldn t like to say that companies deliberately send in just one version of a game for review, but attempts to persuade them that they should let us see *every* copy meet with very little enthusiasm

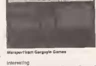
If you find a game that you have seen recommended which turns out to be rubbish on your machine, please write in and let me know

Two companies that seem to go to great lengths to ensure that owners of all machines receive a quality product are Gremlin Graphics and Mikro-Gen Both of these have recently sent through games that have become great favourites of mine

Gremlin has lately had a lot of acclaim for the graphically excellent *Way of the Tiger* but I actually prefer the infuriating and wickedly addictive *Bounder* which was deservedly popular on the Commodore and has lately appeared on Amstrad and Spectrum Don't bother buying it if you don't have a joystick and let s have some pokes *please!*

## Fast monsters

Mikro-Gen has a new game that, so far is available on Amstrad only Called *Equinox*, it s one of the few releases that makes Amstrad multicolour mode look intricate and fascinating and which plays like a cross between a platform game and *Defender* – lots of satisfying zaps and explosions and some fast monsters together with just enough strategy to keep it



*Marsport* from Gargoyle Games

interesting

Mikro-Gen has provided some tips and after a decent interval we will print a selection of these

Before we get on with more *Marsport* tips can I just give a quick mention to a nice Fanzine-type mag, *High Score* available at £1 per issue from Anthony Marshall 41 Loders Green Eastfield, Scarborough North Yorkshire Y011 3LB

The magazine is aimed at Spectrum owners but the tips and high scores may be of interest to others If you do buy it, please don t plagiarise anything for this column

Now then, in *Marsport* you should have the earmuffs from the safety room in Joly Now get the empty tank from Alba and the oxygen from the chemists and make them into an air tank

The next step is to get the calculator machine from level B and get the lift down to Gill On Gill to get through the danger room you need to take the bomb and use it as a key – after this every time you pass through you must put each new bomb in the refuse

To get past the next danger room you need the earmuffs to protect you from the sonic bomb This will give you access to a lift to level C where you will find some steps The danger room on this level is a vacuum and the air tank lets you survive Go down to Farr and enter the gas room that contains the clue The game is the key



In case you haven t guessed, the calculator (adder) and steps combine to make snakes and ladders It is on this level that the third key to M-central will be found

## Important clues

Getting through the games room will give you access to hale level at last (where all the computers etc, are)

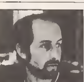
On this level you will find three key slots – two outside the door to M-Central and one in the control room Put a key in each and you will have completed the first part of the game

You will receive two important clues on this level – I m the sentry gives you the method to the solution of part two is you have to solve five clues given by five vidtex machines

The answer to each leads you to combine two objects many of which you have already used The clue about the heralds knowing all that is alien is an important pointer to the value of certain items you will find

When you leave Hale you will find that all previously restricted doors will now be open and you will have access to some more of the game With the new objects that you find you will be able to open the remaining danger rooms

The first one to solve is the virus room on Level C, where you need an antidote To make this on the Amstrad version (I understand the syringe is not necessary on the Spectrum version) you need the insect from Gill (ant) the tea from the bar (ti) and the pointe from the Oratory (pointe is dot plus e le dole)



# From the Amstrad – to the Atari

*Tony Bridge looks at the first Quill'd adventure for the Atari, The Quest of Abraham Smee*

The Quill, as Corner readers will be well aware has become the standard adventure-writing utility on the Spectrum It has engendered many great games – and, it has to be said, some awful ones too – so I m always amazed that it does not seem to have done so well on other machines Now that Gilsoft have released *The Quill* for the BBC maybe we will see a new source of adventures though the utility is not easy to use well I urge any Beebers to investigate the program and try their hand

A couple of weeks ago I looked at *The Lost Phirious* the first Quill d adventure for the Amstrad and now, Laurie Power has sent me another first his Atari *Quill'd* game, *The Quest of Abraham Smee*

The title is rather evocative as to the story there's not a lot of information This is the first screen Sickness was upon you when you stumbled to this valley As you thrash about in troubled sleep you hear the voice of the Wise He no longer plays in he North so evil plays in the land Go north, Abraham As you wake all memory fades ' How you remember what was said to you by the Wise (what?) is not made clear, and this scene-setting is spectacularly unhelpful – but you awake in the attic of a house and it is here that the inevitable problems start.

## Sudden death

For the most part *Smee* is standard-issue *Quill*, with white text on blue paper and a rather attractive fade-up' to each screen There is the obligatory sudden-death' in most *Quill d* adventures this takes the form of hunger or thirst but Laurie has used a little more imagination in devising a band of black raiders who thunder in to the house and kill you unless you avoid them in the correct way The natural inclination of most adventurers, I suspect, is to err on the side of caution so at the start of a quest short forays into the opening locations are undertaken to pick up useful objects and generally get the lie of the land That ll do no good in *Smee*! Yes, you'll find a way of avoiding the clutches of the Riders but then you ll find yourself scuppered later as they lock the door of the house behind them – you must get the key before they do! It s easily done, but I guarantee that you will die several times before finding the solution You must leave the safety of the house and find a useful object before nipping back inside to escape the Riders

## Imaginative

In fact though the problems are not on the whole difficult and largely of the build boat from wood nails and hammer/examine everything for useful objects variety they are managed throughout with flair and occasionally, a great deal of imagination Desmond ('some legendary character ) makes an hilarious appearance singing, not of gold this time but hey-nonny-no and many of the descriptions are atmospheric giving just the right amount of information and the spur to get you hunting for the next location It is small details like Desmond that add interest to any adventures, and *Quill d* games in particular – in fact it's the *Quill'd* variety above all others that requires the little touch of originality such as Laurie brings to *Smee*

I'll forgive Laurie his sacriligious comments regarding Level 9 and their lack of feel and game logic (are you playing the same games Laurie?) and agree with his thought that puzzles should make sense within the world of the adventure He is offering *Smee* at the price of just £2 (tape) or £3 (disc), which is the bargain of the year for novice players – Atari owners send off right now! Write to Laurie Powers 8 Hall Road, Rusholme Manchester 14

Now from Quills to an adventure for the BBC machines *Project Thesius* is the second in the Rick Hanson series from Robico It s written by Robert and Mike O Leary using Robert s Message Compression System *Midge* K has assigned a dangerous mission to you, Rick. middle name Danger That s all that you're told and the game starts with you on a desolate beach

Location descriptions are long consisting largely of exit descriptions which certainly makes a refreshing change from ' Exits N E The problems to start with are not very difficult (soft sand in a cave exists solely for the adventurer to dig in!) but wrong moves tend to end with sudden unannounced death though the reasons for your demise make sense with hindsight So you ll slowly progress through the first couple of dozen locations finding the traps until you become well and truly stuck at the first really swinish problem

## Good addition

This is the kind of adventure that I like and the whole thing is helped along by a very fast display and a good vocabulary Commands such as 'Get All' (still not recognised by the majority of programs) are possible and though much of the game is run along Matchword lines (for example to start with you are dripping wet and a towel is at hand eventually you ll find the combination of DRY WITH TOWEL but that's not glaringly obvious though it *is* frustrating) I found it very addictive and compulsive Although Robico s packaging is as usual rather austere and uninspiring (none of the usual waffle here!) I d recommend *Project Thesius* as a good addition to the Beeber s adventure library

The program will set you back £9 95 on tape (BBC B or Electron) £11 95 on disc (state 40 or 80 track) – although these prices come down to £8 46 and £10 46 respectively if you join Robico s Discount Club Fairland Close Llantrisant Mid-Glamorgan, CF7 8QH

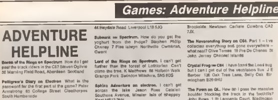
### Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand

Fill in the coupon explaining your problem, send it to us, and a fellow adventurer may be able to help

Remember – the system only works if those adventurers who have solved the puzzles get in touch Every week is Save An Adventurer Today (SAAT) week!

Adventure .................... on (Micro) ....................
Problem ....................
Name ....................
Address ....................



# ADVENTURE HELPLINE

**Lord of the Rings on Spectrum** How do I get past the black riders in the C5? Steven Ogilvie 56 Marning Field Road, Aberdeen Scotland

**Pettigrew's Diary on Electron** What is the password for the first part of the game? Peter Armstrong 83 College Street Cleethorpes South Humberside

**The Hulk on Spectrum** I've protected myself from the ants. How do I get to Antman? Brett Norris, Rama, Martins Close, Keevil, Trowbridge, Wiltshire BA14 6NJ

**Castle of Terror on C64** How do you get out of the room where the treasure is kept? Mark Gidden 3 Fallowfield Orton Wistow Peterborough Cambs

**Lord of the Rings on Spectrum** What use does the green elf stone have? How do you use it? Mr J Nasir, 5 Fairfield Avenue Hendon, London NW4 3TN

**Sphinx Adventure on Electron.** I can't find the mouse or the boat. Joseph McQuade 2 Etterick Road, Blantyre Glasgow G72 0QR

**Heroes of Karn on Amstrad** I can't get started at all and would be glad of any help C Taylor 44 Heydale Road Liverpool L18 5JQ

**Subsunk on Spectrum.** How do you get the yoghurt from the fridge? Stephen Philip Chaney 7 Plas Islwyn Northville Cwmbran, Gwent

**Lord of the Rings on Spectrum.** I can't get further than the forest of Lothlorien Can't climb the tree. K Matthews 66 Holbein Walk Grange Park Swindon Wiltshire, SN5 6DS

**Sphinx Adventure on electron.** I can't get across the lake Jason Ross Catalan Southsea Avenue, Minster Isle of Sheppey Kent ME12 2NH

**Hitchhikers Guide to the Galaxy on Tatung Einstein** 1) How do I open the screening door? 2) How do I get the particle? 3) What do I do on the presidential speedboat? Philip Wheatley Highfields Trowell Moor Trowell Notts NG9 3PQ (Tel 0602 283610)

**Gremlins on C16/Plus 4** How can I kill the gang of gremlins when attacked? Alan Leech 35 Holdfield Crescent, Ashton-under-Lyne, Lancs OL6 8HP

**Spiderman on Spectrum.** How do I get past the fan? How do I make the web? Each time I try it says I've got baby formula Brett Norris, Rama, Martins Close Keevil, Trowbridge Wiltshire BA14 6NJ

**Castle of Terror on C64** I cannot get out of the secret panel with the treasure. J Biddulph, 191 Brookside Newtown Carlisle Cumbria CA2 7JX.

**The Neverending Story on C64.** Part 1 – I've collected everything and gone everywhere – what next? Clive Tomes 16 Pre De Chenes St John Jersey Channel Islands

**Crystal Frog on C64** I have fixed the Load bug but I can't get out of the ventilation flue J E Barber 136 Oak Tree Lane, Selly Oak Birmingham B29 6HU

**The Pawn on QL.** How do I pass the massive boulder blocking the track in the foothills? John Bows 1 St Leonards Court, Bladington Oxford.

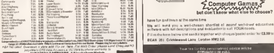
**Murder at the Manor on Spectrum** How do I get out of the sand pit and keep the sheep in the pen? Miss D Thompson 86 Symonds Road Preston PR2 3DJ

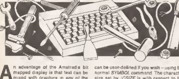
**Lord of the Rings part 1 on Spectrum** How do you manage to cross the last bridge without being caught by the black riders? Mr J Nasir 5 Fairfield Avenue, Hendon, London NW4 3TN

**Twin Kingdom Valley on C64** How do you get the staff of gold from the witch in the east tower? Clive Tomes 16 Pre des Chenes St John Jersey CI

**Waxworks on Spectrum** How do you open the crack? What do you print next? Elfyn Prys Roberts Tan-y-parc The Green, Denbigh Clwyd N Wales







# CHARACTER EXPANSION

by Brian Cadge

An advantage of the Amstrad's bit mapped display is that text can be mixed with graphics in any of the three display modes. However, it would often be useful to be able to alter the size of the text characters displayed for use in title screens, menus, and other displays. This is the facility that this program gives you, via two new commands.

Type in, save and run the Basic Loader program, taking care with the Data statements. If you haven't made any mistakes entering the code you will get a message informing you that the new commands have successfully been loaded.

Now type in the short demonstration program, to get an idea of what the commands can do. This demo program simply displays the letters 'PCW' in all possible sizes in all three modes.

The two new RSX commands are called CSIZE and DISPLAY, the syntax of them is as follows:

**|CSIZE,xmag,ymag**

Where *xmag* is the horizontal magnification factor and *ymag* is the vertical magnification factor. So to get triple height, double width characters you would type *|CSIZE,2,3*. Note the '|' before the command name, this tells Basic that the command is an external RSX command ('|' is obtained using Shift @).

Also note that there is a comma immediately after the command name. *Xmag* and *ymag* must be in the range 1 to 7. Obviously using *|CSIZE,1,1* would give characters of the normal size.

Once you have set the size of characters, a string is printed using the |DISPLAY command. So if *X$* is a string containing the message to be printed, the syntax of the command is:

**|DISPLAY,@X$**

The '@' is necessary before the string variable name to pass the string descriptor (containing the length and start address of the string) to the machine code routine. The string is displayed from the current cursor position, so you can use the normal *LOCATE* command to position the text. The characters are printed with their top left hand corners at the cursor position. Take care not to cause the screen to scroll within a *|DISPLAY* command, ie, do not try to print the expanded characters too low down the screen, otherwise each section of the expanded character will be printed on a seperate line.

There are no restriction on the use of the new commands; they can operate in all modes, and the characters in the string can be user-defined if you wish – using the normal *SYMBOL* command. The character size set by *|CSIZE* is with respect to the normal character size for the current screen mode. So *|CSIZE,2,1* will give mode 1 size characters in mode 2, and mode 0 size characters in mode 1. The characters are displayed in the current pen and paper colours. One point to note is that the program uses character number 255 – *chr$(255)* – internally so this must always be a user-definable code, codes 0-254 can be Rom based. Also there is no point in trying to use *CHR$(255)* in your own programs as the routine redefines it to display the expanded characters.

The assembly language listing is included to show how the program actually operates, and this is fully commented. The main routine is called *PRTCH*; this prints an expanded character at the current cursor position. The routine first copies the matrix for the required character from Rom or Ram into its own workspace, next it expands it vertically by the current value of *MULTY* (set by *|CSIZE*). Finally, it expands each byte horizontally and defines *chr$(255)* as part of the expanded character – this is then printed using the normal Rom print routine. This process of defining *chr$(255)* and printing it goes on until the whole of an expanded character has been built up and printed.

Once a character has been printed, the cursor position is updated to be ready for the next character. So successive *|DISPLAY* commands without using *LOCATE* between them will cause each string to be printed one after another. Note that control codes cannot be used within a *|DISPLAY* string.

The *|CSIZE* routine forces the *xmag* and *ymag* parameters to be in the range 0-7 by an *AND 7* command, and then ignores the result if it is zero. Bigger sizes could have been used with only a little more memory, but characters seven times their normal size should be big enough for anyone!

```
10   Basic loader program for Character Expander
20 MEMORY 41000
30 FOR i=41001 TO 41408
40 READ a$:v=VAL("&"+a$)
50 cs=cs+v:POKE i,v
60 NEXT i
70 IF cs<>51405 THEN PRINT"DATA ERROR - Check listing";CHR$(7):STOP
80 CALL 41001:CLS:PRINT"|CSIZE and |DISPLAY commands loaded -   You can now
 NEW this program."
90 END
100 DATA 01,3B,A0,21,C2,A1,CD,D1,BC,3E,02,32,CA,A1,32,CB,A1,C9,43,A1,C3,94
110 DATA A1,C3,A7,A1,43,53,49,5A,C5,44,49,53,50,4C,41,D9,00,CD,A5,B9,CD,06
120 DATA B9,01,08,00,11,CC,A1,ED,B0,CD,09,B9,3E,00,32,E0,A1,32,E1,A1,CD,78
130 DATA BB,22,DC,A1,22,DE,A1,DD,21,E2,A1,CD,00,A1,21,E2,A1,3A,E1,A1,B7,28
140 DATA 07,01,08,00,09,3D,18,F6,EB,06,08,FD,21,D4,A1,C5,3A,CA,A1,47,1A,00
150 DATA 21,1A,A2,CB,25,A1,21,1A,A2,3A,E0,A1,4F,3E,00,47,09,7E,FD,77,00,FD
160 DATA 23,13,C1,10,DE,3E,FF,21,D4,A1,CD,AB,BB,2A,DE,A1,CD,75,BB,3E,FF,CD
170 DATA 5D,BB,3A,DD,A1,3C,32,DD,A1,3A,CA,A1,47,3A,E0,A1,B8,28,06,3C,32,E0
180 DATA A1,18,9D,3A,CB,A1,3D,47,3A,E1,A1,B8,28,19,3C,32,E1,A1,3A,DF,A1,32
190 DATA DD,A1,3A,DC,A1,3C,32,DC,A1,3E,00,32,E0,A1,C3,79,A0,3A,DE,A1,6F,3A
200 DATA DD,A1,67,25,CD,75,BB,C9,06,08,21,DC,A1,C5,3A,CB,A1,57,7E,DD,77,00
210 DATA DD,23,15,20,F7,23,C1,10,EE,C9,32,C1,A1,78,32,C9,A1,3E,80,32,C6,A1
220 DATA 32,C7,A1,3E,00,DD,E5,DD,77,00,DD,23,10,F9,DD,E1,3A,C9,A1,32,C8,A1
230 DATA 3A,C6,A1,47,3A,C1,A1,A0,28,22,3A,C7,A1,47,DD,7E,00,B0,DD,77,00,CD
240 DATA 7E,A1,3A,C8,A1,3D,32,C8,A1,20,E9,3A,C6,A1,CB,3F,32,C6,A1,30,CF,C9
250 DATA 3A,C9,A1,47,CD,7E,A1,10,FB,18,EA,3A,C7,A1,FE,01,28,07,CB,3F,32,C7
260 DATA A1,18,07,DD,23,3E,80,32,C7,A1,C9,DD,7E,00,E6,07,CB,32,CB,A1,DD,7E
270 DATA 02,E6,07,C8,32,CA,A1,C9,DD,6E,00,DD,66,01,7E,B7,C8,23,5E,23,56,F5
280 DATA D5,1A,CD,5A,A0,D1,F1,13,3D,20,F4,C9
```

```
10   Demo Program for Character Expander
20 ON ERROR GOTO 130
30 a$="PCW"
40 FOR m=0 TO 2
50 MODE m:WINDOW #1,1,80,2,25
60 FOR y=1 TO 7
70 FOR x=1 TO 7
80 CLS#1:LOCATE 1,1:PRINT USING "Mode # x=#  y=#";m,x,y:|CSIZE,x,y
90 LOCATE 1,12:|DISPLAY,@a$
100 FOR d=1 TO 500:NEXT
110 NEXT x,y,m
120 CLS:END
130 IF ERR=28 THEN PRINT"Run the basic loader before this program" ELSE PRINT"Error ";ERR;"at line";ERL
140 END
```

```
      Character Expander for Amstrad

         ORG  41000
         ENT  $
         LD   BC,BCSPAT
         LD   HL,DOBUF
         CALL #BCD1          ;Setup RSX commands
         LD   A,2            ;Default Magnification
         LD   (MULTX),A      ;Save in X Mag
         LD   (MULTY),A      ;Save in Y Mag
         RET
BCSPAT   DEFW CMDS
         JP   CSIZE
         JP   DISPLY
CMDS     DEFM "CSIZ"
         DEFB "E"+128
         DEFM "DISPLA"
         DEFB "Y"+128
         DEFB 0
PATCH    CALL #BBA5          ;Get adrs of char matrix
         CALL #B906          ;Enable lower ROM
         LD   BC,8           ;Number of bytes in matrix
         LD   DE,MATRIX      ;Address to store it
         LDIR
         CALL #B909          ;Disable lower ROM
         LD   A,0
         LD   (XCHR),A       ;Zero Column count
[illegible]
```

# Readers' survey

If you missed last week's Reeder's Survey, well, here's a second chance to tell us what you think of us, and help War on Want at the same time.

You can help us by filling in the survey printed below, and for every completed questionnaire we receive, we'll donate 10 pence to WOW. The money will go to its general fund which goes to help fight poverty in the Third World, just as does money spent on WOW's compilation tape for the Spectrum.

Please note that the survey runs over TWO pages. Once you've removed our special pull-out supplement, you'll find that the Survey can also be pulled out, without damaging your copy of the magazine.
Send your completed survey off to Readers' Survey, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP, to reach us by Monday, June 16. We will publish the results in a future issue of the magazine.

**1 Which of the following computers do you own?**

Acorn BBC ☐ Acorn Electron ☐
Amstrad 464/664/6128 ☐ Amstrad PCW 8256/8512 ☐
Atari ST ☐ Atari 400/800 ☐
Commodore 64 ☐ Commodore C16 ☐
Commodore 128 ☐ MSX ☐
Sinclair Spectrum ☐ Sinclair QL ☐
Other (please specify) ________

**2 When did you buy your first computer?**

Within last six months ☐ Six months to 1 year ago ☐
1-2 years ago ☐ More than 2 years ago ☐

**3 How long have you had your current computer?**

Less than six months ☐ Six months to 1 year ☐
1-2 years ☐ More than 2 years ☐

**4 Do you plan to buy a new computer this year?**

Yes ☐ No ☐
If yes, please specify model

**5 Which of the following peripherals do you own?**

Monitor ☐ Printer ☐
Disc drive ☐ Modem ☐
Microdrive ☐
Light pen ☐ Graphics tablet ☐
Plotter ☐ Mouse ☐
Other (please specify)

**6 Which of these peripherals do you plan to buy this year?**

Monitor ☐ Printer ☐
Disc drive ☐ Modem ☐
Light pen ☐ Graphics tablet ☐
Plotter ☐ Mouse ☐

**7 How much do you spend on software each month?**

Up to £10 ☐ £10-20 ☐
£20-30 ☐ More than £30 ☐

**8 How much time do you spend at your computer each week?**

Less than 2 hrs ☐ 2-10 hrs ☐
10-20 hrs ☐ More than 20 hrs ☐




# SINCLAIR MICROS

## INSIDE

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BOBBY BEARING – THE EDGE'S LATEST

Whatever the fate of the Sinclair brand name under the Amstrad administration the Spectrum will probably continue to be the country's most popular micro for some time to come. There's no sign of a let-up in the stream of innovative new products in both the games and the utility line and the dedication of Spectrum users is legendary. With the 128K machine and the rumoured Super-Spectrum excitement is still high.

This week we'll look at some stunning word-processors, the current crop of Spectrum 128 games, the impressive Bobby Bearing from The Edge, and the latest news from the world of the QL (yes, it's still alive and kicking!)

Together with a history of the Spectrum and a look at the latest video technology it's just a taste of how the Sinclair micros continue to provide fun and excitement for every owner. ◄

# Sinclair Show surprises

The May Microfair was a rum do, notable mainly for a general air of uncertainty and an almost total lack of new products for the Spectrum. Instead we were swamped with new releases for the QL, a system which it seems unlikely will continue to be produced unless by some miracle CST manages to save it.

As reported last week the big news for QL users is the CST Thor, an upgrade of the existing machine which will eventually become an entirely new system.

Sandy's floppy disk drive

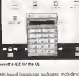
The prototype Thor is a repackage of the company's existing add-ons fitted into a single case with a detachable IBM-AT-style keyboard. The new system, then, includes an enhanced QDOS, 640K RAM, single or dual 720K 3.5 floppy disk drives, and a 20 Mb Winchester option. The Winchester QDISC costs around £1,000, although CST are anticipating a price cut.

CST hopes to obtain QL's so that complete systems can be sold rather than just offering a Thor upgrade. The final system is hoped to include a new 68020 processor, 1 Mb RAM, a 20 Mb floppy disk, the XCHANGE package, upgraded QDOS and casing at around £1800. CST plans a September launch.

Remaining with QL hardware Farmintel showed the Sandy range of add-ons including the 3.5 floppy disk drive, RAM card with through connector, twin expansion unit and Super Board with disk driver, parallel printer port, and superbasic extensions. Car Electronics and the SuperToolkit QL, a 16K ROM module which plugs into the expansion slot and provides a full screen editor, default directories, job control, resident programs, file handling, extended networking, assignable keystrings and many more features.

Eidersoft's ICE program, a fully icon based desktop manager and front end for QDOS, comes on an EPROM cartridge and uses "next to no RAM". ICE is designed to be compatible with any Superbasic program and most commercial software, can be used with joysticks, keyboard, or a mouse, and offers multitasking, a clock, and calendar features. Costing £49.95 ICE is one of a series of utility packages and games for the QL from Eidersoft.

Prospero Software showed a series of



Eidersoft's ICE for the QL

68000-based lanaguage packages, including Pro Pascal, Pro Fortran and the Prospect graphics subroutine library. On the games front, MOA showed a preview of 2092, a complex Moon Buggy variant for the QL. Although the preview looked pretty flickery the finished version will be available soon and we'll be able to give it a fuller review.

GAP software showed the Designer QL package, which includes a full screen editor with text facilities, additional text styles, and a character generator, while Datalink's CAD PAK is a more technically-minded program.

As for the Spectrum, most of the new releases seemed to be concerned with overcoming the limitations of the tape



OUT OF THIS WORLD!
NEW 2001
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If you want the best for your Spectrum, ensuring it advances with technology, the Saga Systems' collection of keyboards and peripherals is essential. And they are all compatible with the 48K, + and 128K Spectrum.
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SAGA SYSTEMS' SOFTWARE
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CITIZEN 120D
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SAGA GLP
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CENTRONICS INTERFACE
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TOTAL
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Amount enclosed £
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Date
Please allow 28 days for delivery
ADVANCE WITH
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loading system TR's Beta-Plus disk interface has a new Magic Button facility, which enables any tape-based program to be transferred to disk with a single press. The interface also features auto boot, random and sequential access file handling, and auto checking. The interface is £109, and the Beta Plus single-sided 40-track disc drive £229

AT & Y's Spec-Mate claims to be able to transfer any tape program to microdrive, Beta or Opus disk. An expansion slot is provided on the back of the unit, so it can be left in place at all times and it also offers turbo-tape loading facilities.

The Mirage Microdriver offers transfer of any tape-based program to microdrive, with optional saving of screen display, screen dumping, freeze facility and through connector

Saga Systems gave a demonstration of their wide range of keyboards and the First Word program reviewed elsewhere in this supplement, while Opus showed the Discovery disk system featuring the 128K version, which allows you to change operating modes at will, set up a random access filing system, use the 128's extra memory as a RAM disk, and retains the features of the original Discovery 1 including the peripheral through-connector parallel printer port, Kempston joystick interface, video monitor port and built-in screen designs. ◀

*Discovery disk system from OPUS*

# Video digitising

By far the most interesting new products at the Show were the two video digitisers, from Data Skip and Sunset.

The principle of video digitising isn't new, but the technology has only recently been adapted for home computers. The DataSkip, a Dutch product retailing at £69, is claimed to be able to digitise a video picture in 0.27 seconds, while the Sunset device seems to have better handling facilities.

The Sunset video digitiser is housed in a Cheatah-style case, plugging into the Spectrum's user port. It can be connected via its standard video socket to any source such as a video camera (either the mono surveillance type or sophisticated home movie models) or the out put from any home video machine. The digitiser will then take any still picture and transfer it to the Spectrum's memory, storing it in the form of a 256 x 1992 pixel image at 16 resolution levels.


*Sunset's video digitiser*

Once you have the image on the screen, you can manipulate it by changing the contrast levels, saving it to cassette or microdrive for later use, load it into art software packages for further manipulation or print it out.

The resolution of the Sunset digitiser is much higher than the Spectrum screen display can actually cope with. It's also larger than the Spectrum's screen display, so you can move the picture around the screen to crop it as you desire.

The menu-driven software allows you to control the input level and display type, though the digitised pictures are limited to black, white and shades of grey

The software can be transferred to microdrive and Sunset are working on various upgrades and extra options. The package comes complete with all necessary leads and adaptors, and will soon be available for the Amstrad at around the same cost of £126.50. We'll review the Digitiser in more depth at a later date.

Microfair Show organiser Mike Johnston said the Fairs would continue so long as there was support from the public and third perty suppliers. On the evidence of this Show, there's plenty of enthusiasm, but the supply of new products for the Spectrum is slowing down, and the QL's future must remain in doubt until Amstrad decide whether it is worth continuing to support it, or arrange to put its fate in other hands. ◀

# The word was Spectrum

CHRIS JENKINS LOOKS AT FIRST WORD AND TASWORO 3, AND PREVIEWS THE WRITER, THE MOST POWERFUL SPECTRUM WORO PROCESSOR YET

Building up an adequate word processing system on the Spectrum requires several tricky decisions. Firstly, you have to decide whether to replace the keyboard then, whether to rely on tape, or go for microdrive or disk drive, next, which printer and interface to use and, perhaps lastly, which software

That last decision is now much easier, since there are now at least three word processing packages which offer a wide range of professional facilities.

**The Last Word** from Saga Systems is designed to be easy to use without having to wade through the 30-page manual All sixty commands are available in an on-screen summary which shows the entry key combination required for each command.

I found it difficult to get used to the fact that the main control keys are Symbol Shift and Extend This makes the Last Word package better suited for the Spectrum + or 128 than the squishy key Spectrum but then how many users would be able to cope with the original keyboard anyway?

On loading – the program can be transferred to microdrive wafadrive, and a variety of disk drives including Beta, Opus and Gordon – the main display shows a file window filling most of the screen, and a command line above it The command line contains indicators for line and column number, tabs, video status, wrap, justify, overwrite, upper case lock and so on

One of the best features of The Last Word is the clarity of the redefined character sets. Admittedly I was using the system with a reasonably good monitor and so had no difficulty with any of the 40, 48 60 or 80-column displays. Using The Last Word with a TV, the 80-column display will probably only be of use for formatting the text; the letters tend to merge into each other too much for the text to be actually legible.

Once you have set the character size you want to work with, the program will "wrap-around" text as it reaches the edge of the screen There are several commands which make it easy to reform paragraphs, either at different text sizes or with new margins or spacing.

Text editing is done with the cursor keys, and you can move through a document either a letter a word, or a sentence at a time, using the Extend mode and symbol shift. Saving text can be done in ways. You can either define a start line and end line, or save the whole document, to either tape or microdrive On reloading you can merge files together consecutively, or insert new material if you wish If loading from tape, all the filenames present will be shown as they are found.

All the facilities of the most powerful word processors seem to be here; shifting blocks of text, search and replace for specific words or phrases, left or right justification and centering word count (the maximum is about 4000 words), a calculator, a clock, variable line spacing, variable copy number and powerful printer control routines

The Last Word supports 24 printer control tokens, which should allow you to use any common printer although the basic set-up assumes a ZX-LPRINT III interface and Epson RX-80 if you are not using a Sinclair printer Kempston, Morex, Tasprint and other interfaces are also supported, and since it is possible to exit to Basic from the main program, it should be possible to cope with other devices too

Overall, while The Last Word is a very comprehensive and powerful program I think its best feature is the screen design Everything looks very professional, and is presented in a clear and user-friendly manner – essential in a program which is likely to become a firm favourite with Spectrum users.◄

**Program** The Last Word
**Supplier** Saga Systems
**Price** £13 95
**Format** Cassette



**Tasword Three** has a lot to live up to, since its predecessors have established themselves as the best word processing packages available for the Spectrum The greatest immediate difference is that T3 is available only on microdrive

The most controversial feature of T3 is the screen display Some word processors, like The Last Word, split a line over two screen lines if the number of characters exceeds the set column width. With T3, the screen scrolls across to keep your text in view as you type it. The obvious disadvantage is that you cannot see all of the text all of the time

TASWORD THREE
The Word Processor

The manual – a beautifully-printed 64-page epic – is very full and clear, and kicks off by explaining the peculiar "reversed E" symbol used on the command menu. This indicates Extended mode of course, and is used in conjunction with single keypresses to access most of the operational modes.

Maximum line length in Tasword 3 is 128 characters, while the display width is normally 64 A single text file can be up to 17000 characters long while the central text window can show either 15 or 22 lines. There's an auto-repeat facility on all keys. There are two help pages, one dealing with text commands and one with I/O These are really only summaries of the facilities available – much better explanations are given in the manual.

Just a list of some of the major features of Tasword 3 will give you some idea of how advanced it is. Word-wrapping at the end of each line can be overridden, as can the automatic justification Right-justified text can be changed to left-justified and vice-versa. Files can be merged simply by loading new ones after existing text. The command cursor can be moved to the start or end of

the file, or the start or end of a line There are slow and fast text scrolls, page skip, delete and undelete, (for the most recent line deleted) auto-insert to rejustify the current paragraph while new text is being inserted, search and replace, block move, printer control characters, variable window size, variable form length to adjust for different paper sizes, variable copy number variable spacing, page numbering, and so on.

Tasword 3 is, up to this point, a powerful but fairly standard word processor However there are a number of clever features which are more advanced than some packages designed for much more expensive systems, for instance a word buffer which makes it practically impossible to "out-type" the program Data Merge Filing for producing multiple copies of files with varying headings, say, conditional printing (by which information held in a data merge file can control whether a document is printed or not), a tutorial program on the microdrive, and a wide range of customisation options for making personalised back ups.

Tasprint and Tasword Two files can be used, providing the correct conversion procedure given in the T3 manual is followed

Unless the inability to transfer Tasword to a disk system puts you off, the facilities and reliability of the product should make it an attractive purchase. I didn't find it as user friendly as Last Word but this is perhaps some reflection of the number of facilities available, and would probably be overcome with familiarity ◀

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**Program** Tasword 3
**Supplier** Tasman Software
**Price** £16 50
**Format** Microdrive

---

The much-anticipeted **Writer** program is an attempt to out-perform every word-processing package available for home computers, and on the evidence of my acquaintance with it so far it in fact beats many professional packages.

Most of the standard text handling facilities are similar to Tasword 3 or Last Word The Writer loads in black and white, but you can customise the screen colours to suit your taste. The status line above the text window gives you Information on file name, line and column number, insert/delete/overwrite modes, caps lock on/off, and so on Pressing the Edit key accesses the main menu bar which includes FILE, EDIT TEXT SEARCH, FORMAT and HELP The HELP menus are only available on the microdrive version of the program

Using GRPH mode you can use a number of accented characters including the German double-s, C-cedilla, grave and acute e, and so on. Wordwrap can be enabled or disabled there's a full search-and-replace facility, page numbering (Arabic or Roman!), headers and footers, printer control characters for underlining, a wide range of printer driver options, compatibility with Tasword 2 and Quill files, and so on and so on However, the normal word processor facilities are just the start of what The Writer can do Firstly it can be customised or operate either with a joystick or with a Kempston mouse The pull-down menu system is comparable to that of the Apple Macintosh, so using it with a mouse is the natural move Using the Mouse eliminates much of the tadium of selecting the correct control keys which is the major bug-bear of some word-processors. You can still use key commands even if you have the mouse in operation

Secondly The Writer takes into account the fact that some printers can cope with over 80 column especially when using condensed modes. The Writer can display up to 127 columns of text with a scrolling display

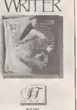
I have not used any other program which has true printer spooling You can actually write one document while another is printing out – and on the 128K version, it's possible to hold up to five documents in memory simultaneously

The Writer is Wordstar file compatible, so you can take your files homes from the IBM PC in work, and load them into the humble Spectrum via the RS-232 on Interface 1

There are also not one but three forms of mail merge a WRITE/INCLUDE function which will pull any microdrive file into your document, a more sophisticated mail merge using some simple Basic programming to merge lists of names and addresses into the text and a third option using the forthcoming Filer program

Perhaps most impressive is the Print Merge facility, which has some capabilities which I found quite astounding. It allows you to merge texts at the time of printing, and set up variables using GET and PUT commands, which can be updated at the time of printing. Conditional printing makes the program print a certain document, or part of a document, only if a condition set by a variable is satisfied. For instance, you could set up a letter reminding a number of clients about overdue debts, and two alternative final paragraphs, such that if the debt is over under £500 the letter reads "... and we would appreciate payment as soon as possible", while if the debt is over £500 it reads "... and the boys will be around to break your legs tomorrow"

Numeric variables can also be handled in the program, to such a level of complexity that you could, for instance from a single given amount print the original, final price including VAT, and the VAT charge separately




Needless to say SofTechnics has made sure that any printer can be supported This isn't just a vague promise – apparently *any* printer which can be attached to the Spectrum can be supported by The Writer using user definable printer definition files. Some of the commonly-used interfaces are ready-defined (Kempston, ZX, etc) but the customising feature allows you to tackle any RS-232 or Centronics printer

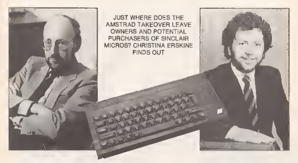
What else do you want? Well, apart from the microdrive transfer facility on the cassette, there ae Opus, Beta and other disk versions coming. It's also possible to integrate files from the Artist graphics program and the forthcoming Filer Database and Spredsheet programs. Eventually SofTechnics hopes to offer a complete integrated system for business and uses such as page make-up for desk-top publishing.

This has necessarily only been an overview of some of the facilities of The Writer There are so many facilities available that it would take a book to thoroughly explore all of them One thing is certain, though, with the Tasword2 compatibility and the promise of forthcoming compatible software releases The Writer presents Spectrum users with yet another worthy contender in the wordprocessing stakes ◀

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**Program** The Writer
**Supplier** SofTechnics
**Price** £17 95
**Format** Cassette, m/drive and disk forthcoming

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JUST WHERE DOES THE AMSTRAD TAKEOVER LEAVE OWNERS AND POTENTIAL PURCHASERS OF SINCLAIR MICROS? CHRISTINA ERSKINE FINDS OUT

# Sinclair's future shock

Sinclair users and software companies alike have been left in a quandary by Alan Sugar's announcement of April 3 that he had picked up the rights to Sinclair's computers for a mere £5 million

Confusion and speculation have surrounded the deal and what it means for the Spectrum, software support, the repair service, and Sinclair's idiosyncratic peripherals ever since, and no-one seems particularly keen to clarify things.

## Bunker

The real losers, so far, appear to be those with faulty Spectrums, especially those who sent them in for repair shortly before the deal was announced Amstrad says it's not its problem, while Sinclair Research has retreated to its bunker at Milton Hall, near Cambridge, although it won t be there much longer the building is up for sale

The repairs issue is the one causing most confusion among Spectrum owners. The truth is that Spectrums sent in for repair before the deal and not yet returned really aren't Amstrad's problem. Amstrad did not buy Sinclair lock, stock and barrel It bought rights to the Sinclair name, rights to manufacture its computers, and the existing stock

The answer then is to contact Sinclair Reseach, or SRL, as it is now known, at Milton Hall, Milton Cambridge CB4 4AE (0223 862661) Repairs are still its responsibility

As for those whose Spectrums go wrong now, the message is clear Don't send them to Amstrad, which is currently selling Spectrum stocks overseas, but take them back to the retailer.

And what of those who had been thinking of buying a Spectrum? Should they do so now, or wait until Amstrad's intended enhanced version appears?

Here,it is really a question of your own patience All Amstrad has said is that it will bring out a Spectrum micro, "Son of Spectrum", as Alan Sugar Amstrad's chairman termed it, for this Christmas, with a tape deck and for around £140, and that it will be a no-compromise entertainment machine. That was at the beginning of April, and there has been no offical word since of any confirmation of this So if you re put off by the Spectrum's squidgy keyboard or lack of joystick port, don t bank on Amstrad rectifying these. It hasn't said it will, however much it may seem a sensible course to take

## Cartridges

Recent speculation has suggested pushing the memory up to 256K Ram, and a facility to use Astron credit-card style cartridges. It remains to be seen whether such is indeed the case There have also been reports that Amstrad may produce the comperable 'super Spectrum , codenamed Loki, which was being developed at Sinclair before the deal went through The specification of Loki allowed for superior graphics and gamesplay but it is not clear what stage of development the machine had reached, nor whether Amstrad will press ahead with it.

On the Spectrum peripherals side, many Microdrive users are worried about continued support – and are wondering if they should junk the whole Microdrive idea and go back to cassette.

This again is up to SRL (Sinclair) However the news for microdrive cartridges may be gloomy Any new QL now looks likely to use floppy discs rather than microdrives (see Popular Computing Weekly News Desk May 15) Continued supply will probably depend on continued demand. Again, contact SRL.

Spectrum 128 owners will have noticed that there is not much in the way of specific software to convince them it was worth shelling out for the new machine. Many of the software companies have postponed plans to bring out 128 versions of titles – or new releases especially for the 128 – until they know how long a life these programs will have under the Amstrad regime

## Exceptions

For 128-specific titles that are out, see the survey elsewhere in this supplement. Unfortunately, you cannot expect much more 128-only products until Amstrad s plans become clearer Rest assured that the vast majority of Spectrum Plus programs will run on the 128

The salient exceptions appear to be Elite (Firebird – compatible version in development) Fairlight (The Edge) Impossible Mission (US Gold), Laser Basic, Laser Compiler (Ocean IQ) Macadam Bumper (PSS), They Sold a Million (Hit Squad), Tomahawk (Digital Integration) and World Series Baseball (Imagine)

Only time will tell whether the popularity of the Spectrum can survive Amstrad s marketing it as an entertainment machine ◄

# THE WRITER



## "The Best"

When it came to reviewing the best in wordprocessors for the Spectrum, Your Sinclair (Jan 1986) said "I have no doubt that 'The Writer' will take over as the best Speccy wordprocessor"

Praise indeed. But praise we think is warranted for what one industry pundit described as "Probably the best wordprocessor I've seen for any Z80 based micro"

Just look at these professional features: up to 127 column screen display, Wordstar compatible, Tasword II compatible, true printer spooling, user definable printer definition files (works with virtually any printer which can be interfaced to a Spectrum), pull-down menus, extensive 'help' files on non-tape versions, mail-merge (works with 'The Database' – forthcoming), print merge enables the definition of variables and numeric expressions in text. 48K and 128K Spectrum versions. Mouse/Joystick pointer options coming.

'The Writer' – "Simply, the best wordprocessor for the Sinclair Spectrum."

STOP PRESS: now Kempston Mouse compatible

SOFTECHNICS

SofTechnics, 12/13 Henrietta Street, Covent Garden, London WC2E 8LH
Tel. 01-240 1422/7877 Tlx 892379

Write for details of 'The Database' and "The Spreadsheet" coming soon.

(The Writer and Artist II are available on most formats — disk, Microdrive and tape).

# THE ARTIST II

COMING SOON





## "Better than the Best"

When we launched 'The Artist' in 1985 it was reviewed as the most amazing graphics package to have appeared for the Spectrum. Indeed, it became one of those very few 'utilities' to actually get into the Gallup Chart.

But now a new graphics package is all set to knock 'The Artist' off its Number One spot – 'The Artist II.'

Artist II has been designed to be the 'best-bar-none' with features including: Icons and Pull-Down Windows, Mouse Control Options (works with four different kinds of mice), 48K and 128K Spectrum versions, same unbeaten line up of graphics features — but now with the addition of elastic lines, elastic circles, elastic ellipses and elastic boxes. Artist II now supports a full range of printers and enables 'dumps' in a variety of sizes. And yes, like Artist I, Artist II is still the only graphics package of its kind with a fully flexible 'cut & paste' facility for any shape of graphics.

PAGE MAKE UP: Artist II will also allow 'The Writer' files to be merged in and enable you to do true 'page make-up' as on much more expensive micros. Ideal for club school magazines, broad sheets, etc, etc.

'The Artist II' – "It's bettered the best"



THE PLANETS
LONG RANGE MAP FOR DESTINATION SELECT
VIEW FROM WINDOW OF THE SURFACE OF PLUTO
martech
CHANNEL FOUR TELEVISION

# IS BIGGER ALWAYS BETTER?

**WHAT CAN YOU DO WITH 128K THAT YOU CAN'T DO WITH 48K? JOHN MINSON LOOKS AT 128 GAMES**

Back in the old days, when Sinclair was synonymous with Sir Clive and not Sugar, the Spectrum 128 launch was heralded with a hall full of software houses, seduced into producing games for the expanded (and more importantly, audible) machine Still the churls of the computer press said it was too little too late and at too great a cost

Now the marketing strategy of Amstrad is set to change all that The spectrum Plus is being off-loaded like aerials from a car boot and the 128 has fallen to the price we said it should have been all along In fact with a probable revamping in time for Christmas (built in tape recorder and almost certainly a joystick socket) it's about to become the machine we wanted all along!

This is sure to create renewed interest from the software houses, most of whom would tell you – off the record naturally – that even at the launch they didn't intend to follow up their initial titles until they'd seen how the machine was selling.

## Bundling

Ocean were the lucky people to get their product bundled with the micro, so there's no avoiding *Daley Thompson's Super Test 128* or *The Never Ending Story* These demonstrate the two most common traits of 128 conversions – improved sound and the avoidance of multi-loads! Both are highly proficient, have nice music to make use of the new sound chip and provide an introduction to keyboard punishing arcade games (was this a Sinclair ploy to write off their new machines quickly?) and accessible adventuring for the newcomer to computing But for the already hardened hacker they hold few thrills

Odin and related label Thor have a trio of games in *Nodes of Yesod Arc of Yesod* and *Robin of the Wood*. The first two are in the arcade adventure mode though that's no bad thing when they're as well done as this 128 means better music and added amusing touches, like the mole belching once it's eaten its way through the moon. The main quibble is that *Arc* is really just more of the same of *Nodes*. *Robin* is a *Sabre Wulfe* variation with some lovely medieval music. Still would you really want to buy them if you'd already got the 48K versions?

Mikro-Gen's *Three Weeks in Paradise* and Gargoyle's *Sweevo's Whirled* indicate another possibility for programmers with all that extra RAM to use. Wally Week has a whole new area of Can Nibble Island to explore though unless you are careful you may well miss the top secret sea-bed missile base This was generally reckoned to be the best of the Wally games and certainly I'd choose the expanded version any time.

The same goes for *Sweevo* a classic of 3D madness which gains an extra 80K of lunacy with new levels for the fruit filled world of wumpuses and geese Blow me if there aren't noses sprouting from the floor now Once again the expansion of a quality product has resulted in a tempting purchase.

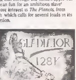
## Improvements

The course of improving on program size has also been followed by Martech with *Samantha Fox Strip Poker* (and no, that doesn't mean a bigger Sam, perish the thought!) I've not actually seen this but apparently it boasts yet more grainy pictures of famed intellectual displaying her most outstanding features. If you merely want to gaze at these protuberances I'd advise purchasing a copy of *The Scum*. However If you want a decent game of seven card poker the program provides it – on the Sam-less side which is presumably the same as the 48K version

One game that has undeniably gained from being reworked is Domark's gory Roman ramble *Gladiator* In its original version It was decidedly a case of nice graphics, shame about the game play Now not only have the backgrounds been added to and the combatants generally tarted up but the original clumsy control system has been jettisoned This means that you now have a chance of stabbing your opponent in the kidneys, chopping at his legs and stabbing him through the adam's apple All good clean fun for an ambitious slave!

Of more interest is *The Planets*, from Martech which calls for several loads in its 48K version.




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Disappointment concerning *Technician Ted* from Hewson's. A good enough game in its day it now looks long in the tooth and I don't quite understand their reason for adding to the size of this amiably daft arcade adventure. Similarly, *The Rocky Horror Show* from CRL has gained too little to make such improvement on the original It's just a slightly louder three voice version of The Time Warp

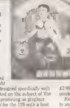
Talking of music, I'm still to see the bigger better version of Melbourne House's *Music Box*, which has lost its Wham tag (that should double sales as people are no longer scared off by the picture of the deadly duo) Apparently it still retains its odd system of notation but the sound is much improved by the new chip and it's one of the few programs to properly exploit the machine.

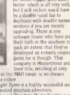
We're also still waiting for *Fairlight 128* from The Edge, who tell us that Swedish programming ace Bo Jangeborg got quite carried away adding new passages and areas which provide alternative methods of solving the secret of Castle Avars. A brief sneak preview indicated improved music too, plus some new skeleton guards and a grisly death mask that appears when Isvar loses his life – so grisly in fact, that it's likely to be removed from the release version!

It's to be hoped that Bo is now hard at work on *Fairlight II* which is being designed specifically with the 128 in mind And on the subject of The Edge they're still promising us graphics package *The Artist* for the 128 with a host of features, plus word processor *The Writer* which will also take advantage of the expanded memory









There are several games here for which bigger does mean better which is all very well, but I still reckon you'd have to be a double sized fan to duplicate with double memory versions if you are merely upgrading. There is one software house who have put their faith in the machine to such an extent that they've developed an entirely original game for it though That company is Mastertronic and their title, retailing at only £2 99 in the MAD range is no cheapo quickie either

*Knight Tyme* is a highly successful sequel to animated graphics adventure, *Spellbound*. This time Magic Knight is cast adrift on a spaceship and has to find his way back to his own time with the help of its various odd inmates. Once again the brilliant windowing system has been used for commands but the real advantage of the increased memory size is the number of locations.



### Potential

At first it may all seem rather limited, but that's only because nobody will listen to you except two droids and the ship's computer Solve the problem of gaining some authority and you can command the captain to fly you to the moon – or round the galaxy at least in search of a solution to your temporal tantrum

So full marks to Mastertronic for producing the first crucial 128 purchase. Others are sure to follow now the machine is credibly priced and seems set at the low end of the Spectrum market (what will the software houses make of the even bigger version rumoured to be on the way?) Until then shell out a meagre £2 99 but spend the rest of your money carefully until programs that properly address the RAM's potential appear ◄

# Ramball rampage!

JOHN MINSON PREVIEWS THE EDGE'S TECHNICALLY STUNNING NEW SPECTRUM GAME, BOBBY BEARING

There are still pleasant surprises to be had in the software industry One of those came the way of Tim Langdell of The Edge recently in the shape of Fig. Fig is two brothers, Trevor Figgins who does the screen design and Robert who does the programming and who literally walked in off the street with a cassette

I'm not very good at writing code,' he explained to Langdell What appeared on the screen gave the lie to that statement immediately Prior to this Fig had made some contributions to 16/48 tape magazine but though the graphics had been great they were lacking in game play But though this was his first real game Robert Figgins had done things that Tim Langdell had previously thought impossible So impressed was he that he consulted *Fairlight* programmer Bo Jangeborg, who also marvelled at the techniques employed. Robert hadn't realised that you weren't supposed to be able to do certain things – and had just gone ahead and done them!

The game in question is available at the end of May and goes by the name of *Bobby Bearing* If that suggests a *Marble Madness* style program you wouldn't be far wrong which means it's entering an increasingly competitive market with the likes of *Quazatron* and *Spindizzy* But *Bobby Bearing* has enough features that are unique and endearing to turn it into something special

The first of these is none other than spherical hero Robert Bearing Esq He's hardly your standard bland ball as he's got an expressive face which registers pain when you allow him to bump off a cliff He's also an example of ingenious programming. While circular objects in previous games of the type have had to be held in the micro's memory as cubes, Fig has found a way of creating a true sphere. This means that you can roll Bobby through a circular hole with only a pixel's clearance on any side!

The landscape too is a masterpiece of crazy programmed paving with some fiendish gradients and indentations which make it more like a pin ball machine at times. The speed of Bobby's rolling progress round the curves is impressively smooth Normally you'd avoid getting crushed below the falling blocks but allow yourself the masochistic luxury just once so that you can admire the animation which allows Bobby to be squashed and note that the higher the hammer, the flatter our hero gets!

So to the plot. Bobby's family has been kidnapped (ballnapped?) by the evil bearing muggers who you'll recognise from their sharpened teeth He has to locate and rescue his brothers then when the fraternal task's complete he goes for the hardest part, to retrieve his cousin This is a quest that only a Ramball could complete.

His mission is made dangerous not only by the evil balls who have various levels of intelligence, some being clever enough to lie in wait to push Bobby off a ledge as he rolls by but also by crushers, magnets and air-ducts. These last mentioned cause course problems when it comes to keeping to the straight and narrow though they can also be beneficial because some are linked to switches and if you manipulate them correctly they will help you on your way

Once a sibling has been located Bobby has to push him back to safety and if you thought dodging all those hazards was bad enough alone, you wait till you've got the added burden of a brother to propel past the traps. Naturally momentum has been included to make it all especially nasty

There are 150 screens of this, which flip smoothly as Bobby moves across them and the price has been set at a bargain £7.95 This is £2 cheaper than standard Edge price and has been done, Tim Langdell explains, because of his faith in the program's sales potential Going by my preview I can only agree. *Bobby Bearing* is certainly more than just another load of old balls! ◀

### 9 What is the main use of your computer (tick one only)?

- Programming
- Word processing
- Graphics
- Games
- Communications
- Music
- Other (please specify)

### 10 Do you progam in any of the following languages?

- Basic
- Pascal
- Logo
- C
- Machine Code
- Forth
- Lisp
- Fortran
- Other (please specify)

### 11 How often, on average, do you buy *Popular Computing Weekly?*

- Subscriber
- Buy every other week
- Buy every week
- Buy once a month or less

### 12 Do any other people read your copy of *Popular Computing Weekly?*

- None
- 3-5
- 1-2
- More than 5

### 13 What is your main reason for buying *Popular Computing Weekly (tick one only)?*

- News
- Other software reviews
- Arcade Action
- Programming features
- Games reviews
- Hardware reviews
- Adventure Corner
- Advertisements

### 14 Please rate the following features according to whether you would like more, about the same or less coverage.

| | More | Same | Less |
|---|---|---|---|
| News | | | |
| New Products | | | |
| Letters | | | |
| Competitions | | | |
| Hardware reviews | | | |
| Games reviews | | | |
| Other software reviews | | | |
| Arcade Action | | | |
| Adventure Corner | | | |
| Programming features | | | |
| New Releases | | | |
| Communications | | | |
| Peek & Poke | | | |
| Bytes & Pieces | | | |
| Games charts | | | |
| Computer Swap | | | |
| Advertisements | | | |

### 15 How interested are you in the following subjects?

| | Not at all interested | Somewhat interested | Very interested |
|---|---|---|---|
| Computer books | | | |
| Computer languages | | | |
| DIY hardware projects | | | |
| Computers in business | | | |
| Computers in education | | | |
| New technology (eg CD-Roms) | | | |

### 16 Which of the following magazines do you buy regularly?

- Crash
- Your Sinclair
- Sinclair User
- ZX Computing
- Zzap 64
- Your Commodore
- Commodore User
- Commodore Computing International
- Amtix
- Amstrad Action
- Amstrad Computer User
- Computing with the Amstrad
- Atari User
- QL World/QL User
- Personal Computer World
- Your Computer
- Byte
- Other (please specify)

### 17 Please give one way in which you think *Popular Computing Weekly* could be improved.

**18 Name** **Age**

**Occupation**

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# MAZE

by Dilwyn Jones

Following on from last week this second program is a simple 3D maze game using both the *Make A Maze* routine and a *MAP* routine. The object of the game is to find your way through the maze in as short a time as possible. At any time you may ask for a map of the maze if you lose your way, but this wastes valuable seconds! The controls are:

N – move or turn to face North
E – move or turn to face East
S – move or turn to face South
W – move or turn to face West
M – Help!! I need a map!!
ESC – I give up ... get me out of here (ie, Quit)

When you eventually find the exit, the program tells you how long it took and asks if you want another game. The size of the maze is set from two to ten across or down at random and is different for every game (random number generator permitting). The maze creation routine may take several seconds to make the maze, in common with other routines of this type.

The view you are given is a 3D perspective effect, looking down the corridor, with openings shown as appropriate. It's slightly slow due to the use of *fill*, so leave out these commands if you want to speed it up a little.

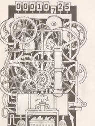
There is no limit to the size of the maze except available memory and how long you're prepared to wait for a maze to be generated – remember that a ten by ten maze will take more than twice as long as a five by five maze.

If anyone would like copies of both programs, send £2.50 plus a formatted microdrive cartridge/floppy disc (5¼" or 3½") to Dilwyn Jones, 4 The Crescent, Bangor, Gwynedd LL57 2AA.

```
100 REMark 3D Maze using maze generator
and mapper
110 REMark by Dilwyn Jones, February 198
6
120 INIT
130 REPeat program
140  across=RND(2 TO 10):down=RND(2 TO 1
0)
150  PRINT#0,'Please wait-designing a ';
across;' x ';down;' maze':MAKE_A_MAZE:x=in
x:y=iny:direc$='e'
160  DISPLAY:BEEP 2000,20:tms=DATE
170  REPeat play_game
180   REPeat loop
190    key$=INKEY$(-1):action=key$ INSTR
 ('nesmwm'&CHR$(27))
200    IF action>0 THEN EXIT loop
210   END REPeat loop
220   IF action=6 THEN CLS#0:PRINT#0,'Qu
it- ';:EXIT play_game
230   IF key$==direc$ THEN
240    IF y=outy AND x=outx AND direc$=
o THEN CLS#0:PRINT#0,'Out of the maze i
n ';DATE-tms;' seconds \\':EXIT play_game
250    SELect ON action
260     =1:IF y>1 AND (maze(y,x)&&1)=1 T
HEN y=y-1:DISPLAY:ELSE OUCH_NO_EXIT 1
270     =2:IF x<across AND (maze(y,x)&&2
)=2 THEN x=x+1:DISPLAY:ELSE OUCH_NO_EXIT
 2
280     =3:IF y<down AND (maze(y,x)&&4)=
4 THEN y=y+1:DISPLAY:ELSE OUCH_NO_EXIT 4
290     =4:IF x>1 AND (maze(y,x)&&8)=8 T
HEN x=x-1:DISPLAY:ELSE OUCH_NO_EXIT 8
300    END SELect
310   ELSE
320    SELect ON action
330     =1:direc$='n'
340     =2:direc$='e'
350     =3:direc$='s'
360     =4:direc$='w'
370     =5:MAP_MAZE:PRINT#0,'Press any k
ey to continue...':IF INKEY$(-1)=CHR$(27
) THEN CLS#0:PRINT#0,'Quit- ';:EXIT play_
game
380    END SELect
390    DISPLAY
400   END IF
410  END REPeat play_game
420  PRINT#0,'Would you like another gam
e?'
430  IF INKEY$(-1)=='n' THEN EXIT progra
m
440  CLS:CLS#0
450 END REPeat program
460 STOP
470 DEFine PROCedure DISPLAY
480  IF direc$='n' THEN NORTH
490  IF direc$='e' THEN EAST
500  IF direc$='s' THEN SOUTH
510  IF direc$='w' THEN WEST
520 END DEFine DISPLAY
530 DEFine PROCedure NORTH
540  CLS:CLS#0:PRINT#0,'Going northwards
...'
550  SETVARS
560  REPeat loop
570   CELL 8,2
580   IF (maze(noy,nox)&&1)=0 OR noy=1 T
HEN EXIT loop
590   noy=noy-1
600  END REPeat loop
610  IF (maze(noy,nox)&&1)=0 THEN WALLEX
IT:ELSE OPENEXIT
620 END DEFine NORTH
630 DEFine PROCedure EAST
640  CLS:CLS#0:PRINT#0,'Going eastwards.
..'
650  SETVARS
660  REPeat loop
670   CELL 1,4
680   IF (maze(noy,nox)&&2)=0 OR nox=acr
oss THEN EXIT loop
690   nox=nox+1
700  END REPeat loop
710  IF (maze(noy,nox)&&2)=0 THEN WALLEX
IT:ELSE OPENEXIT
720 END DEFine EAST
730 DEFine PROCedure SOUTH
740  CLS:CLS#0:PRINT#0,'Going southwards
...'
750  SETVARS
760  REPeat loop
770   CELL 2,8
780   IF (maze(noy,nox)&&4)=0 OR noy=dow
n THEN EXIT loop
790   noy=noy+1
800  END REPeat loop
810  IF (maze(noy,nox)&&4)=0 THEN WALLEX
IT:ELSE OPENEXIT
820 END DEFine SOUTH
830 DEFine PROCedure WEST
840  CLS:CLS#0:PRINT#0,'Going westwards.
..'
850  SETVARS
860  REPeat loop
870   CELL 4,1
880   IF (maze(noy,nox)&&8)=0 OR nox=1 T
HEN EXIT loop
890   nox=nox-1
```

Going northwards...

```
900 END REPeat loop
910 IF (maze(ny,nx)&&8)=0 THEN WALLEXIT:ELSE OPENEXIT
920 END DEFine WEST
930 DEFine PROCedure SETVARS
940 nx=x:ny=y:xxx=0:rx=200:yyy=0
950 yinc=9:xinc=20:ht=100:shrink=1.25
960 END DEFine SETVARS
970 DEFine PROCedure CELL (l,r)
980 yy=yyy+yinc:xx=xxx+xinc:rxx=rx-xinc:hht=ht-yinc-yinc
990 IF (maze(ny,nx)&&l)=l THEN LSIDEOPEN:ELSE LSIDEWALL
1000 IF (maze(ny,nx)&&r)=r THEN RSIDEOPEN:ELSE RSIDEWALL
1010 xxx=xx:rx=rxx:yyy=yy:ht=hht:yinc=yinc/shrink:xinc=xinc/shrink
1020 END DEFine CELL
1030 DEFine PROCedure LSIDEOPEN
1040 INK 5:FILL 1:LINE xxx,yy TO xx,yy TO xx,yy+hht TO xxx,yy+hht TO xxx,yy:FILL 0
1050 END DEFine LSIDEOPEN
1060 DEFine PROCedure LSIDEWALL
1070 INK 1:FILL 1:LINE xxx,yyy TO xx,yy TO xx,yy+hht TO xxx,yyy+ht TO xxx,yyy:FILL 0
1080 END DEFine LSIDEWALL
1090 DEFine PROCedure RSIDEOPEN
1100 INK 5:FILL 1:LINE rx,yy TO rxx,yy TO rxx,yy+hht TO rx,yy+hht TO rx,yy:FILL 0
1110 END DEFine RSIDEOPEN
1120 DEFine PROCedure RSIDEWALL
1130 INK 1:FILL 1:LINE rx,yyy TO rxx,yy TO rxx,yy+hht TO rx,yyy+ht TO rx,yyy:FILL 0
1140 END DEFine RSIDEWALL
1150 DEFine PROCedure OPENEXIT
1160 INK 2:LINE xxx,yyy TO rx,yyy TO rx,yyy+ht TO xxx,yyy+ht TO xxx,yyy
1170 END DEFine OPENEXIT
1180 DEFine PROCedure WALLEXIT
1190 INK 5,5,3:FILL 1:LINE xxx,yyy TO rx,yyy TO rx,yyy+ht TO xxx,yyy+ht TO xxx,yyy:FILL 0
1200 END DEFine WALLEXIT
1210 DEFine PROCedure OUCH_NO_EXIT (di)
1220 IF (maze(y,x)&&di)=di THEN
1230 BEEP 1000,25:PRINT#0,\ * NO EXIT THAT WAY * :PAUSE 10:BEEP 1000,60
1240 ELSE
1250 BEEP 1000,50:PRINT#0,\ *** OUCH' A Wall' ***
1260 END IF
1270 END DEFine OUCH_NO_EXIT
1280 DEFine PROCedure MAP_MAZE
1290 CLS:CLS#0
1300 FOR dn=1 TO down+1:BLOCK 14*across+2,1,14,11*dn,7
1310 FOR ac=1 TO across+1:BLOCK 2,11*down+1,ac*14,11,7
1320 FOR dn=1 TO down
1330 FOR ac=1 TO across
1340 IF (maze(dn,ac)&&2)=2 THEN BLOCK 2,10,14*(ac+1),11*dn+1,0
1350 IF (maze(dn,ac)&&4)=4 THEN BLOCK 12,1,14*ac+2,11*(dn+1),0
1360 END FOR ac
1370 END FOR dn
1380 BLOCK 2,10,14,11*iny+1,0
1390 BLOCK 2,10,14*(across+1),11*outy+1,0
1400 INK 5:CURSOR 2,11*iny+1:PRINT CHR$(189)
1410 CURSOR 14*(across+1)+2,11*outy+1:PRINT CHR$(189)
1420 PAPER 2:INK 7:CURSOR 14*x+2,11*y+1
1430 IF direc$== n THEN PRINT CHR$(190)
1440 IF direc$== e THEN PRINT CHR$(189)
1450 IF direc$== s THEN PRINT CHR$(191)
1460 IF direc$== w THEN PRINT CHR$(188)
1470 PAPER 0
1480 END DEFine MAP_MAZE
1490 DEFine PROCedure MAKE_A_MAZE
1500 DIM maze(down+1,across+1)
1510 inx=1:iny=RND(1 TO down)
1520 x=inx:y=iny
1530 maze(y,x)=maze(y,x)!!32
1540 outy=RND(1 TO down):outx=across
1550 FOR ac=1 TO across:maze(0,ac)=32:maze(down+1,ac)=32
1560 FOR dn=1 TO down:maze(dn,0)=32:maze(dn,across+1)=32
1570 maze(iny,inx)=maze(iny,inx)!!8
1580 maze(outy,outx)=maze(outy,outx)!!2
1590 REPeat outer
1600 IF (maze(y,x+1)&&48)<>0 AND (maze(y,x-1)&&48)<>0 AND (maze(y+1,x)&&48)<>0 AND (maze(y-1,x)&&48)<>0 THEN
1610 maze(y,x)=(maze(y,x)&&239)!!32
1620 IF (maze(y-1,x)&&20)=20 THEN y=y-1:NEXT outer
1630 IF (maze(y,x+1)&&24)=24 THEN x=x+1:NEXT outer
1640 IF (maze(y+1,x)&&17)=17 THEN y=y+1:NEXT outer
1650 IF (maze(y,x-1)&&18)=18 THEN x=x-1:NEXT outer
1660 EXIT outer
1670 END IF
1680 REPeat inner
1690 rand_no=RND(0 TO 9)
1700 newx=x+(rand_no=0 OR rand_no=1)-(rand_no=5 OR rand_no=6)
1710 newy=y+(rand_no=2 OR rand_no=3 OR rand_no=4)-(rand_no=7 OR rand_no=8 OR rand_no=9)
1720 IF (maze(newy,newx)&&48)=0 THEN EXIT inner
1730 END REPeat inner
1740 maze(newy,newx)=maze(newy,newx)!!16
1750 SELect ON rand_no
1760 =7,8,9:maze(y,x)=maze(y,x)!!1:maze(newy,newx)=maze(newy,newx)!!4
1770 =0,1:maze(y,x)=maze(y,x)!!2:maze(newy,newx)=maze(newy,newx)!!8
1780 =2,3,4:maze(y,x)=maze(y,x)!!4:maze(newy,newx)=maze(newy,newx)!!1
1790 =5,6:maze(y,x)=maze(y,x)!!8:maze(newy,newx)=maze(newy,newx)!!2
1800 END SELect
1810 x=newx:y=newy
1820 END REPeat outer
1830 maze(outy,outx)=(maze(outy,outx)&&239)!!32
1840 END DEFine MAKE_A_MAZE
1850 DEFine PROCedure INIT
1860 MODE 8
1870 WINDOW 512,256,0,0:PAPER 0:CLS
1880 WINDOW 456,164,28,14:BORDER 2,4:INK 7:CLS
1890 WINDOW#0;456,54,28,183:BORDER#0;2,6:PAPER#0;0:INK#0;7:CLS#0
1900 END DEFine INIT
```



# DATA ENTRY

by Tony Dexter

One activity that is common to almost all data processing is the need to enter display and update or correct records. To do this in Sinclair Basic one can use the obvious method of prompting for each item of data in turn with a line such as

16 INPUT "Type the letters of your NAME then Press ENTER ";S$

You then follow with some form of error checking routine There are disadvantages with this method, since errors realised after the Enter key has been pressed cannot be corrected It is also difficult to know just where you are unless previous entries are displayed

A more desirable method would display all data prompts and the associated fields on the screen at the same time Editing would be possible for any of the fields at any time

This program shows that friendly input can be achieved on the Spectrum and it is intended that this program could form a party of any larger program where multiple data entry is required It provides the following features

1) All input fields are displayed on the screen, together with prompts and instructions
2) When Enter is pressed the cursor skips to the start of the next field
3) Any Data in any field may be altered either at the time of entry or after all fields have been filled
4) Editing employs the cursor keys for speedy alteration
5) Overtyping Backspace Delete and Space are permitted
6) The program protects against over-long Data entries
7) The Data saved is displayed when entry and editing is completed
8) Data may be re-displayed and the program put in Edit mode to allow minor corrections and updating to take place

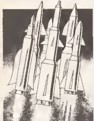
The listing should prove simple to follow and is well peppered with Rem statements to explain the various phases It should be noted that the layout of the screen and the number and lengths of data strings may be altered

For the sake of illustration it has been assumed that this routine is part of a program which requires the entry of Names Address and Date of Birth Obviously this could be any other information Club Membership Records Customer Sales Details, etc

For editing and error trapping reasons all entry is by String$ Input and numbers are entered as numerical characters If your program required numerical processing then the relevant string$ can easily be transferred to numeric variables or to a numeric array by means of the VAL function

Although this program has been written specifically for the Spectrum It can readily be adapted by users of other machines

```
[illegible]
```



# BANKING

*by Richard Tanner*

This program is designed to help you keep track of your bank or building society account, on the C128 in 80 column mode

Type in the program as shown making sure that you are in Business (lower case) mode. The REMs should be typed in exactly as they are, otherwise, as I have found out, the C128 seems to corrupt the line.

When you have finished typing in the program insert a formatted disc save the program with *Dsave banking*. When that has saved type *GOTO 240*. When the menu appears select 1 (save the data so far) this creates an empty sequential file from which the program can read when it boots. Don't forget to save the data after you have updated it.

**Program Notes**

| | |
|---|---|
| 50-130 | This sets up the screen in black and white (reversed) and 80c1m. Also the character set is set to lower |
| 150-220 | Opens a disc file, reads all of the previous data and puts it into arrays |
| 240-430 | Prints up the menu, takes the selection and jumps to the required subroutine |
| 440-520 | Saves all the bank data to a sequential file BANKFILE |
| 540-600 | Inputs data into the bank for crediting |
| 620-680 | Inputs data into the bank for debiting |
| 700-730 | Prints the up to date balance |
| 750-990 | Prints a statement of all the occurrences in the account to the screen |
| 1010-1220 | Prints a statement of all the occurrences in the account to the printer (set as device 4) |

```
10 rem "BANKING"
20 rem "BY RICHARD TANNER 1.2.86"
30 rem "PUT THE C128 IN 80c1m MODE WITH DISK
   DRIVE"
40 rem "SET UP SCREEN AND COLORS"
50 graphic 5,1 color 6,2 color 5,1
60 fast
70 cr$=chr$(13)
80 print chr$(14)
90 scnclr
100 print "    Date        Receipts   Withdrawals
    Balance        Purpose of transaction"
110 print"______________________________________
    ______________________________________
    ____________"
120 print "[illegible]","
    ACCOUNT NO. (type in own no.)  ACCOUNT NA
ME  (type in own name.    )"
130 gosub 980
140 rem "READ FILE OFF DISK"
150 dopen#1 "bankfile"
160 input#1,ct
170 dim d$(ct+100),mi(ct+100),mo(ct+100),ex$
    (ct+100)
180 input#1,am
190 for a=1 to ct
200 input#1,d$(a),mi(a),mo(a),ex$(a)
210 next
220 dclose#1
230 rem "PRINT MENU AND GET SELECTION"
240 restore 300
250 f$=ds$ if f$<>"" then print f$
260 for a=1 to 6
270 read a$
280 print print a,".  ",a$
290 next
300 data "Save The Data So Far" "Input Some
    Money","Take Out Some Money","Check On
    Balance","Print a Statement","Output
    Statement to Printer"
310 print
320 print"Please select an Option ",
330 getkey a$
340 if a$<"1" or a$>"6" then goto 330 else
    goto 360
350 print"Fault In Program Please Check It
    Out" end
360 gosub 980
370 if a$="1" then gosub 440
380 if a$="2" then gosub 530
390 if a$="3" then gosub 610
400 if a$="4" then gosub 690
410 if a$="5" then gosub 740
420 if a$="6" then gosub 1000
430 goto 240
440 rem "SAVE FILE TO DISK"
450 dopen#1,"@bankfile",d0,u8,w
460 print#1 ct
470 print#1 am
480 for a=1 to ct
490 print#1,d$(a),cr$,mi(a),cr$,mo(a),cr$,
    ex$(a)
500 next
510 dclose#1
520 return
530 rem "INPUT SOME MONEY INTO FILE"
540 print input"What Date Was The Money Put
    In ",a$
550 print input"How Much Did You Put In ",m
560 print input"Where Did The Money Come From
    ",f$
570 print print a$," . +",m," . ",f$
580 print input"Is This OK ",b$
590 if b$<>"y" and b$<>"yes" then window
    0,2,79,22,1 goto 540
600 let ct=ct+1 am=am+m d$(ct)=a$ mi(ct)=m ex$
    (ct)=f$ window 0,2,79,22,1 return
610 rem "TAKE SOME MONEY FROM THE FILE"
620 print input"What Date Was The Money Taken
    Out ",a$
630 print input"How Much Did You Take Out ",m
640 print input"Why Did You Take It Out ",f$
650 print print a$," . -",m " . ",f$
660 print input"Is This OK ",b$
670 if b$<>"y" and b$<>"yes" then window 0,2,
    79,22,1 goto 620
680 let ct=ct+1 am=am-m d$(ct)=a$ mo(ct)=m ex$
    (ct)=f$ window 0,2,79,22,1 return
690 rem "CHECK ON THE BALANCE"
700 print"Balance Enquiry"
710 print"You Have £",am,"  In your Account"
720 getkey a$
```

```
730 gosub 980 return
740 rem 'PRINT A STATEMENT TO THE SCREEN'
750 my=0
760 c=0
770 for a=1 to ct
780 if mi(a)>0 then my=mi(a)+my
790 if mo(a)>0 then my=my-mo(a)
800 if len(d$(a))<8 then d$(a)=d$(a)+"
    " goto 800
810 print,"| ",d$(a),"| £ ",
820 if mi(a)=0 then print"         ", else goto
    840
830 goto 850
840 print using"####.##",mi(a),
850 print " | £ ",
860 if mo(a)=0 then print"         " else goto
    880
870 goto 890
880 print using"####.##",mo(a),
890 print " | £ ",
900 print using"####.##",my,
910 print "  |   ",e$(a),
920 print tab(79)"|"
930 c=c+1 if c>15 then getkey a$ c=0 print'g'
    print'@",
940 next a
950 getkey a$ gosub 980 return
960 end
970 rem "THIS BIT OPENS THE WINDOW"
980 window 0,2,79,22,1
990 return
1000 rem "PRINT A STATEMENT TO THE PRINTER
    (DEVICE 4)"
1010 open 4,4,7
1020 print#4 "  Date        Receipts
    Withdrawals     Balance
    Purpose of transaction'
10^0 my=0
1040 c=0
1050 for a=1 to ct
1060 if mi(a) 0 then my=mi(a)+my
1070 if mo(a)>0 then my=my-mo(a)
1080 if len(d$(a))<5 then d$(a)=d$(a)+"
    " goto 1080
1090 print#4,"|  ",d$(a),"| £ ",
1100 if mi(a)=0 then print#4,"
    ", else goto 1120
1110 goto 1130
1120 print#4 using"####.##" mi(a)
1130 print#4  " | £ ",
1140 if mo(a)=0 then print#4 '
    ", else goto 1160
1150 goto 1170
1160 print#4 using"####.##",mo(a),
1170 print#4," | £ ",
1180 print#4,using"####.##",my,
1190 print#4,"  |   ,e$(a)
1200 next a
1210 close4
1220 getkey a$ gosub 980 return
```



# TOOLBOX

*by Paul Murray*

Just when you thought it was safe to go back to the keyboard. Those of you who were trying to get Paul Murray's *Error* Toolbox command to work from the code published in Vol 5 No 18 will find the listing below of great interest.

Yes – it's the real code, not the series of random numbers previously printed, that by amazing coincidence bore a striking resemblance to the *Header* code shown the week before.

Our apologies.

| | | | | | |
|---|---|---|---|---|---|
| 64163 | 62 | 1 | [illegible] | 1 | 1[illegible]5 |
| 64168 | 50 | 252 | [illegible] | 227 | 11[illegible] |
| 64173 | 176 | 92 | 227 | 1[illegible] | 61 |
| 64178 | 92 | 51 | [illegible]1 | [illegible] | 190 |
| 64183 | 250 | 229 | [illegible] | 1[illegible] | 175 |
| 64188 | 92 | 201 | 253 | 2[illegible] | 1 |
| 64193 | 126 | 202 | 2 | 19 | 253 |
| 64198 | 126 | 0 | 254 | 8 | 202 |
| 64203 | 2 | 19 | 42 | 92 | 92 |
| 64208 | 229 | 33 | 28 | 251 | 34 |
| 64213 | 92 | 92 | 205 | 1[illegible]8 | 10 |
| 64218 | 235 | 225 | 34 | 92 | 92 |
| 64223 | 235 | 218 | 2 | 19 | 25 |
| 64228 | 126 | 0 | 60 | 167 | 202 |
| 64233 | 2 | 17 | 5 | 1[illegible] | 146 |
| 64238 | 62 | 1 | 5 | 0 | 23 |
| 64243 | 176 | 229 | 224 | 56 | [illegible] |
| 64248 | 190 | 50 | 229 | 62 | 1 |
| 64253 | 167 | 32 | 5 | 205 | 10 |
| 64258 | 30 | 24 | 3 | 205 | 2[illegible] |
| 64263 | 30 | 253 | 126 | 0 | 60 |
| 64268 | 50 | 27 | 251 | 25[illegible] | 54 |
| 64273 | 0 | 255 | 24 | 11 | 0 |
| 64278 | 0 | 0 | 0 | 0 | 0 |
| 64283 | 21 | 76 | 72 | 78 | 61 |
| 64288 | 62 | 127 | 219 | 254 | 31 |
| 64293 | 48 | [illegible] | 195 | 118 | 2[illegible] |

CHECK SUM=14[illegible]84

## Handy Hints on Amstrad
*by K H Denham*

Here are two short but handy tips for the Amstrad computers.

The first establishes whether or not a disc drive is attached to a CPC464, which can be used to determine the type of file handling facilities to be offered and whether or not instructions for operating the cassete recorder controls need to be displayed at the appropriate times.

The second is a machine code routine which makes a test for whether or not a printer is on-line. This is very useful since if no printer is attached any attempt to send data to the printer stream causes the computer to "hang". Using this routine a program can check for the presence of a printer before printing and can produce a suitable warning message if necessary.

```
10 ON ERROR GOTO 50:|DISC
20 IF TAPE=1 THEN PRINT "NO DISC ATTACHED" EL
SE PRINT "DISC ATTACHED"
30 END
50 IF ERL=10 THEN TAPE=1:RESUME NEXT:ELSE ON
ERROR GOTO 0
```

```
10 MEMORY 39999:rem routine can be loaded to a
ny suitable address
20 FOR X=1 TO 13:READ X$:POKE 39999+X,val("&"+
X$):NEXT
30 DATA CD,2B,BD,D0,DD,6E,00,DD,66,01,36,01,C9
40 a%=0:CALL 40000,@a%
50 IF a%=0 THEN PRINT "Printer not on-line" EL
SE PRINT "Printer OK"
60 END
```

## Flash Load on CBM 64
*by D W Light*

Flash Load is designed to boot your own programs from tape and produce flashing bands of colour during loading.

*Run-Stop* and *Run-Stop/Restore* are both disabled and *List* is scrambled giving some measure of program protection.

To use, type in Lines 3-35 and save at the beginning of a blank tape. Now load your own program. When loaded, add line 0 SYS 49183 (this turns off the flashing colours and also allows your program to poke M/Code routines into $C000 (49152) upwards if required).

Finally, resave your program immediately after the Flash Load program. Rewind the tape; pressing Shift/Run Stop will load and run Flash Load, which in turn will load and auto-run the next program.

```
100 REM+++ SAVE LINES 300-350 ON TAPE FOLLOWED BY  ++++
110 REM+++ YOUR OWN PROG. [illegible] AFTERWARDS.  ++++
120 REM+++ PRESSING SHIFT/RUN [illegible] THE M/CODE ++++
1[illegible]0 REM+++ ROUTINE WHICH THEN LOADS AND AUTO-RUNS ++++
140 REM+++ YOUR PROGRAM COMPLETE WITH FLASHING  ++++
1[illegible] REM+++ BANDS OF COLOUR.  ++
[illegible] REM+++ RUN-STOP & RUN-[illegible] ARE BOTH  ++++
170 REM+++ DISABLED [illegible] SCRAMBLED.  +++
[illegible]
190 REM++++ [illegible]  ++
200
210 REM++++ PROGRAM [illegible] START WITH LINE -  ++++
220
230 REM +++ [illegible] 491[illegible]  ++++
250 REM++++ THIS ROUTINE ALTERS THE [illegible] STOP  ++++
260 REM++++ VECTORS LOCATED AT [illegible]  49329  ++
270
280
290
[illegible] A=49[illegible] FORB=[illegible] NEXT
310 IF[illegible]THENPRINT[illegible] DATA ERROR" STOP
320 SYS49152
330 DATA 169,0,[illegible],141,041,[illegible],169,171
,141,11[illegible],02,1[illegible]
34[illegible] DATA [illegible]
0,6,234,[illegible]
[illegible] DATA 234,1[illegible]
```

## Circle Routine on Spectrum
*by P I Berry*

As the Sinclair circle routine is so slow, inaccurate and cannot draw circles only partly on the screen, I have developed my own algorithm.

It is approximately twenty times faster than the built-in function, draws perfect circles and it can cope with plotting partly off the screen.

The routine is set up using the Def Fn with the start address of the code located at 23296. The program is called by FNC with three parameters (x, y, radius). Lines 1-5 set up the routine by poking data into the printer buffer. Lines 55-9 are a short demo – a series of circles are drawn, but the plotting can be skewed left or right using keys O and P.

```
  5 REM      CIRCLE  PROGRAM
  6 REM        by  P.BERRY
  7 REM
 10 FOR f=23296 TO 23296+72
 20 READ a
 30 POKE f,a
 40 NEXT f
 50 DEF FN c(x,y,r)=USR 23296
 55 LET x=127
 60 FOR r=1 TO 87 STEP 1.2
 70 LET x=x+(INKEY$="p")-(INKEY$="o")
 80 LET l=FN c(x,87,INT r)
 90 NEXT r
100 DATA 221,42,11,92,221,110,4,221,102
,12,221,70,20,14,0,80,203,58,213,205,38,
91,209,12,122,145,87,48,4,122,128,87,5,1
20,185,48,237,201,205,41,91,120,65,79,20
5,47,91,120,237,68,71,125,129,212,59,91,
125,145,216,197,79,229,124,128,71,254,17
6,220,223,34,225,193,201
```

# Time is of the essence

*Chris Jenkins does battle with renegade time lords in the new package from Microdeal*

If you've seen three or four avid players huddled around a large cabinet game in the arcades recently, chances are they've been playing *Gauntlet*. Microdeal's *Time Bandit* is of the same style and a very impressive package for the powerful Atari 520ST.

The ST facilities of large memory, fast detailed graphics manipulation and great colour are all used to excellent effect in *Time Bandit* – so much so that the game doesn't support mono monitors.

If it's scenario you want, *Time Bandit* has it aplenty. Writers Bill Dunlevy and Harry Lafnear of MichTron USA are obviously D & D fans: the accompanying booklet includes a verse worthy of the legendary William McGonagall ("The Lords of Time did not interfere /Afraid that ghastly effects would appear") and an explanatory storyline.

The guardians, renegade time lords who have used the fabled time gates for their own ends, have hidden their treasure in mazes spread throughout the time zones. The creators, inventors of the time gates, want you to retrieve these treasures and have offered you mucho cash to do so.

The first screen allows you to select one or two player mode, keyboard or joysticks, and to examine the high-score records which are saved to disc.

You can also watch a helpful demo before you begin, although it's much more fun if you leave everything a mystery!

Each leg of the adventure begins from a time gate. Simply move your bandit into it and he will be transported into a maze.

You might have seen many games which resemble the maze sections, but none with this much imagination and detail.

Your bandit moves through deserts, forests, ghost towns, starships and various mysterious blacknesses, firing rockets at a host of enemies – snakes, spiders, lizards, lions, aliens, roving eyes and spooks.

In many of the mazes there are ladders which transport you to other levels, and transporter discs to skip to other locations. In most, there are keys which have to be found in order to get through locked doors and treasures which give you bonus points on collection.

Look out, too, for scrolls which can give you clues to mystery bonuses. You can leave a maze at any time (if you can find your way to the exit) but it won't be finished until you have found all the treasures.

There are also one-way doors which will only allow you to pass in a certain direction, so some map-making may be necessary.

Since you can't hope to out-run or out-shoot all the baddies, you must go for life bonuses (for every 1000 points). Remember that if you act in a heroic manner, moving quickly and shooting fast, you will earn a higher Manner rating.

Incredible though it may seem, there are 16 time gates, each of which has 16 levels of difficulty, and all of which you must defeat before reaching The End. Goodness knows how long it would take!

The best thing about *Time Bandit* is that it sends up many of the arcade and adventure games it purports to imitate. There's a Pac-Man section set in a 2-D maze, one part is set on the Starship Enterprise, and somewhere in there is a hidden Space Invaders game!

Another good feature is the two-player mode, in which there are two screen displays (in the same time gate). The two bandits can either work together, or shoot it out between them. The first to die becomes a shadow, which can help or hinder the remaining bandit, shoot creatures and steal treasure, although the score will not advance.

There's also a text adventure section, in which you have to make the correct verb-noun responses in order to find the treasure and escape.

The authors of this program have obviously had fun writing it: don't deny yourself the fun of playing it!

***Time Bandit*** **is available from Microdeal, at 41 Truro Road, St Austell, Cornwall (0726 68020), licensed from MichTron in the US. It costs £29.95, but, beware, it will only work on the 520ST with a** ***colour*** **monitor.**

# Programming: Peek & Poke



## Design background

*R Gleaves, of Bromley in Kent, writes*

**Q I have a Spectrum Plus, and wonder if you could explain how I can incorporate my graphic design in my Basic program using the design as a background, or perhaps suggest a book that would cover the subject I must also explain that I am not very technical**

A As you don t say what purpose the background is going to serve, it is difficult to be specific However, if you create your design with a utility such as *Melbourne Draw* you can then drop into Basic and save the design to tape using

```
SAVE "filename" SCREEN$
```

This will save whatever you have on the screen at the time You can then *Load* it back from your Basic program using the reverse process Alternatively, you can save the screen to memory using the following routine

```
10 CLEAR 58430
10 FOR N=58431 TO 58450
30 READ B POKE N B NEXT N
40 DATA 33 0 64 17 83 228 24 6 6
   33 99 228,17 0 64 1 0,27,237
   176 201
30 NEW
```

The above program pokes a machine code routine into memory and can be called the *LET SCREEN=USR 58431* which pokes your screen into memory Now clear the screen, and type *LET SCREEN=USR 58439* Neat huh?

## Legal position

*P L Adcock, of Norwich, writes*

**Q Twelve months ago I purchased a Bud Interstate 31 joystick interface which has an 15 month guarantee Unfortunately it has new developed a fault and despite writing and phoning Bud Computers, I cannot contact them I bought it directly from them so I cannot take it back to a shop Please could you tell me 1) How to get the interface fixed under its guarantee? 2) What is the legal position the consumer is in when a company goes bust Does the guarantee have to be honoured?**

A You have my deepest sympathy Your guarantee is basically worthless if Bud Computers have ceased trading Therefore, there is no way of getting the interface repaired under the guarantee As a consumer you have no redress against any company which ceases trading as far as guarantees go Basically the company is bust and no longer exists In *Popular Computing Weekly* May 1 an article on repairing simple joystick faults was published If your problem goes beyond this then your only possible way out is to try to get your interface repaired (at your expense I am afraid) by one of the repair companies such as those which regularly advertise in Popular

**Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD**



# Any questions?

*David Wallin delves into the depths of his mailbag – plus information on terminal software for a variety of machines*

This week I'll be sorting out a few more answers to some of your questions

Firstly Ian Highton of London wishes to know how to use his Pace modem and Commstar software to access a 1200/75 Bulletin Board rather than a viewdata board Well Ian, I contacted Pace itself about this and they came up with this answer basically It is the same as with a 1200/75 viewdata board but there are a few alterations to make to the commstar configuration

Turn on and connect up as per usual Then go to the Initialise section and select the menu You select 1200/75 baud in chat mode

Now you just continue as if it were a viewdata board According to Pace this is all you have to do I assume that the Protocol (word length parity, stop bits) will be set up automatically If it doesn't work then I would advise playing around with the settings Most boards give the protocol when you first log on

A letter received back in March from Mike Barnes of Morden, Surrey, pointed out some semi-mistakes from previous articles (thanks a bunch, Mike)

1) Modem speed is written transmit/receive But apparently this was printed once as receive/transmit 1200/75 means both receive and transmit at 300 bps

2) Baud/Bps are not the same, Mike points out This is of course quite true but there is no visible difference at lower speeds Bps stands for bits per second The baud rate of a modem is in fact its modulation rate Mike writes the actual definition of baud is 'the number of signal elements changes per second There may be any number of bits-per-modulation rate of 1600 baud on a 4800 bps modem (tribit/baud)

This is really quite complicated which is why I have not tried to explain it before Why do so many people think the two terms are the same?

Well, partly because people like me say they are to keep things simple, and also because lower speeds ie, 300 or 1200 have one-bit-per-baud resulting in equal bps and baud rates

From now on, I'll be more pedantic There have been a number of letters about CCITT (which incidentally stands for The International Consultative Committee for Telegraph and Telephone – why CCITT? The actual definition is French and reads Committee Consultative Internationale de Telegraphique et Telephonique), asking for a list of more of the more common CCITT standards They're those awkward V (and X) numbers X numbers refer to data networks and are not applicable here but will be mentioned in the future For those people here are some of the other numbers

V series – these are regulations regarding Data Transmission over telephone circuits

| | | |
|---|---|---|
| V3' | – | International Alphabet number 5 (ASCII) |
| V21 | – | 300/300 bps |
| V22 | – | 1200/1200 bps |
| V22bis | – | 2400/2400 bps 600 baud |
| V23 | – | 1200/75 bps or 75/1200 bps |
| V24 | – | RS 232 Interface |
| V25 | – | Intelligent modem (one with a built-in cpu and firmware Usable with any computer with a full RS232 and some with an RS432 Most V25 modems are auto dial/answer If you're interested in intelligent modems Hugo Cornwall's *Hacker's Handbook* (Century) goes into it in more detail) |

I have had a number of letters asking for details of Bulletin Boards in a particular area If you wish to know of boards of a certain speed or format in either a certain area, or the whole country for that matter, then send me an SAE (to the address below) giving firstly, the speeds (1200/75 viewdata 1200/75, 75/1200, 300/300 1200/1200 VTX 5000 Spectrum format 1200/1200 full duplex or Bell speeds) you are interested in secondly the area(s) in the country (Scotland South East South West, Wales, Northern Ireland Midlands, London, the North, Channel Islands), and thirdly anything else you feel may be important

As all the boards I know are held on a database, I will be able to look up the boards that comply to your requirements in seconds and get a printout sent off But please enclose that SAE, as postage costs are high

Lastly for today, Terminal Software I have had a few letters about terminal software for a modem, particularly the Protek 1200 If you don't have that much money, then look in any good communications book and you may find a listing *The Hacker's Handbook* for the BBC (this is not *The Hacker's Handbook* by Hugo Cornwall but by Geof Wheelwright and Ian Scales and published by Longmans at £4 99) includes a good piece of BBC terminal software

This book is also available for the Spectrum and Commodore 64/128 If you are prepared to spend more money then read on

● CP/M machines (PCW, CPC Einstein etc ) – Comm Plus (Modem House) approx £85

● Spectrum 128 – Modem House is apparently developing a new piece of terminal software for the 128 News on that when it is released

Spectrum 48K plus VTX 5000

● Spectrum 48K + VTX 5000/RS 232 port plus modem – Stephen Adams has written software for both of these Look in the back of some of your older PCWs for information Approx £5 or £6

● Others – Modem House (again) produces complete packs of software and hardware for everything from a QL to a Mimi 805 to a Zorba So it may be able to help you Modem House can be contacted on 0392 213355

Lastly, the gremlins have been at this column again a few weeks ago there was the article on FBBS (Finchley Bulletin Board Software), and somewhere along the line the MusicTel number was changed from 01-455-0843 to 01-458-0843 Apologies to whoever the wrong number belongs to MusicTel is on 01-455-0843 and is 1290/75 (bps) and 300/300

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you

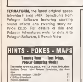
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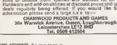




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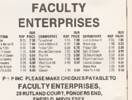
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# New Releases

***John Cook looks through this week's new arrivals***

## Amstrad

**Program** *Tank Commander* **Type** Arcade **Micro** Amstrad **Price** £9.95 **Supplier** Amsoft, Victoria House, PO Box 10, Sunderland SR1 3AV

*Tank Commander* has been out on disc for quite a bit – in fact the instruction manual still tells you to type 'Run Disc ' to load the program But now that it's on tape, a lot more people are going to be able to play this quite enjoyable little game

If say *Masterfile II* is the meat and two veg of the Amstrad market and *Get Dexter* the pâté de fois gras then *Tank Commander* is a couple of Big Macs and large fries The scenario has you controlling a tank in enemy infested territory – your task, to rescue friendly agents without getting blown up

There are three screen displays – an overall map showing you the location of your agents a tactical map showing your immediate whereabouts (this is the screen you move around on) and a Battle screen If you need to hang a label on it, this part is a cross between *Beachhead* and *Battlezone*

Great use is made of colour (lots of pastoral green) and although the action isn't going to get the pulse racing way over 160, it's an agreeable enough combination of gentle strategy and colourful arcade I wish Amsoft would knock a couple of quid off their prices though

**Program** *Music Box* **Type** Utility **Machine** Amstrad **Price** £9.95 (cassette) £16.95 (disc) **Supplier** Electric Studio PO Box 96 Luton, Beds LU5 2JP

**Program** *Heavy on the Magik* **Type** Adventure **Machine** Amstrad **Price** £13.95 (disc) **Supplier** Gargoyle Games 74 King St, Dudley West Midlands

**Program** *The Pace Compilation* **Type** Arcade **Machine** Amstrad **Price** £2.85 **Supplier** Pace Software 40 Bainton Grove Clifton Nottingham NG11 8LG

**Program** *Masterfile II* **Type** Utility **Machine** Amstrad **Price** £33 (disc) **Supplier** Amsoft Victoria House PO Box 10 Sunderland SR1 3AV

**Program** *Strangeloop* **Type** Arcade **Machine** Amstrad **Price** £13.95 **Supplier** Amsoft Victoria House PO Box 10, Sunderland SR1 3AV

**Program** *Shogun* **Type** Strategy **Machine** Amstrad **Price** £9.95 (cassette) £14.95 (disc) **Supplier** Virgin Games, 2 Vernon Yard, 119 Portobello Road London W11

## Atari ST

**Program** *Menu+* **Type** Utility **Machine** Atari ST **Price** £19.95 **Supplier** Metacomco 26 Portland Square Bristol BS2 8RZ

## Atari

**Program** *Racing Construction Set* **Type** Arcade **Machine** Atari **Price** £14.95 **Supplier** Ariolasoft UK 68 Long Acre, London WC2

**Program** *Savage Pond* **Type** Arcade **Machine** Atari **Price** £2.99 **Supplier** Bug Byte Liberty House 222 Regent Street London W1R 7DB

**Program** *Kikstart* **Type** Arcade **Machine** Atari **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street London EC2

## Commodore 128

**Program** *Kikstart* **Type** Arcade **Machine** Commodore 128 **Price** £4.99 **Supplier** Mastertronic 8-10 Paul St London EC2 4JH

**Program** *The Last V8* **Type** Arcade **Machine** Commodore 128 **Price** £4.99 **Supplier** Mastertronic, 8-10 Paul St London EC2 4JH

If my memory serves me correctly this week sees the first Commodore 128 dedicated games software hitting the streets – from of all places Mastertronic

Both the above releases are enhanced versions of existing 64 programs *Kikstart* and *The Last V8* The former loosely based on the similarly named occasional TV series equally loosely based on off-road motor-cycling, will only appeal to real Clumsy Colin *Action Biker* headbangers

*The Last V8*, however is worth more than a passing look and a passing listen in fact because, as before with the 64 version the best things about the 128 version are the graphics and the sound

Rob Hubbard's soundtrack is as excellent as it ever was (accept no imitators) and the screens are colourful and detailed

If you want to impress aged relatives that computers really are fabby then this is still the program to put up However instead of the single 'race against time' scenario this version has three The first has you driving your V8 round the surface of Mars picking up fuel rods (15 of them) avoiding craters (judging by the number of potholes the gas board has been very active on Mars recently) – then off to Earth, for the second section

This part is the most similar to the original game Lastly you race around avenues under the Earth city avoiding radiation areas (a bit like going on a Russian coach tour I suppose) to reach the HQ

Well it's all good clean fun but it's still basically as unplayable as ever And there's still that annoying little flicker on the bottom of the play screen Still with both titles going for £4.99 a place, most complaints are going to be drowned out by the ringing of cash registers Great value at least as far as *Last V8* is concerned

Pick of the week

## Cauldron II

**Program** *Cauldron II* **Type** Arcade **Machine** Commodore 64 **Price** £8.95 **Supplier** Palace Software 275 Pentonville Rd London N1 9NL

Palace may not be the most prolific software house in the world – but when it does produce something it's always worth looking at *Cauldron II* is no exception A clue to the scenario can be gleaned from the sub-title, *The Pumpkin Strikes Back*

Remember last time (*Cauldron 1*) when you were the witch trying to defeat the evil pumpkin? Well this time, you play the last surviving pumpkin trying to do the dirty on the now all-powerful witch queen Tough at the top isn't it?

It is your yellow tumescant pumpkin's task to bounce around the 100-odd roomed witch's castle collecting important articles (you know they are important because they flash) avoiding nasties zapping every now and then in order to cut a lock of hair from the witch's head and then drop it in a cauldron in the bowels of the castle to destroy her power

The game departs from *Cauldron 1* in that it lacks the scrolling landscape which was one of its major features Now you bounce along from screen to screen – again very nicely designed by Steve Brown – and it's really quite fun

Somehow it reminded me of *Underwurlde* and *Thing on a Spring* with better graphics than the former but without the continuous sound track of the latter As a sequel, it stands up quite well

## C16/Plus 4

**Program** *Kikstart* **Type** Arcade **Machine** C16/Plus 4 **Price** £1 99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2

**Program** *Return of Rockman* **Type** Arcade **Machine** C16/Plus 4 **Price** £1 99 **Supplier** Mastertronic 8-10 Paul St London EC2

**Program** *Hektik* **Type** Arcade **Machine** C16/Plus 4 **Price** £1 99 **Supplier** Mastertronic, 8-10 Paul Street London EC2

**Program** *Mercenary* **Type** Arcade **Machine** Plus/4 **Price** £9 95 **Supplier** Novagen, 142 Alcester Road Birmingham B13 8HS

No doubt there are a lot of pretty disgruntled Plus/4 owners out there at the moment. What with the heavy discounting around Christmas in the big electrical chains the fact that the built in software is only disc compatible (however there is now an add-on to make it work with tape) and almost all the games are C16 and Plus/4 that is stuff that runs on the C16, so it will also run on its Big Brother it s no surprise

But now there s some good news for Plus/4 owners – go out and treat yourself to *Mercenary*

You ve seen it on the Atari, you ve seen it on the 64 – well now Novagen has taken the bold step of converting it for the Plus/4 in the hope that quality starved owners will flock to it in their thousands

Novagen claims that the game play is exactly the same – and I ve yet to find anything to disagree with that The same 3D vector graphic combination of flight simulator arcade adventure with the same stranded-on-Targ plot, it looks nice, more like the Atari version if anything

Still back at the Plus/4, it may well be the most expensive piece of software that you ve yet bought for your machine, but I d be surprised if you were disappointed

## Commodore 64

**Program** *Southern Belle* **Type** Strategy **Machine** Commodore 64 **Price** £7 95 **Supplier** Hewson Hewson House 56B Milton Trading Estate Milton, Abingdon Oxon OX14 4RX

**Program** *Max Headroom* **Type** Strategy **Machine** Commodore 64 **Price** £9 95 **Supplier** Argus Press Software Liberty House 222 Regent Street London W1R 7DB

**Program** *Olli I & II* **Type** Arcade **Machine** Commodore 64 **Price** £2 99 **Supplier** Bug Byte Liberty House 222 Regent Street London W1R 7DB

**Program** *Shogun* **Type** Strategy **Machine** Commodore 64 **Price** £9 95 (cassette) £12 95 (disc) **Supplier** Virgin Games 2 Vernon Yard 119 Portobello Road London W11

**Program** *Standing Stones* **Type** Adventure **Machine** Commodore 64 **Price** £14 95 (disc) **Supplier** Ariolasoft, UK, 68 Long Acre, London WC2

**Program** *Cal-Kit* **Type** Utility **Machine** Commodore 64 **Price** £34 95 **Supplier** Ariolasoft UK, 68 Long Acre London WC2

**Program** *B/Graph* **Type** Utility **Machine** Commodore **Price** £29 95 **Supplier** Ariolasoft UK, 68 Long Acre London WC2

## BBC & Electron

**Program** *Enthar Seven* **Type** Adventure **Machine** BBC B **Price** £17 95 (40 track disc) £16 95 (80 track disc) **Supplier** Robico Software, 3 Fairland Close, Llantrisant, Mid Glamorgan CF7 8QH

**Program** *Savage Pond* **Type** Arcade **Machine** BBC/Electron **Price** £2 99 **Supplier** Bug Byte, 222 Regent St, London W1R 7DB

**Program** *Jack Attack* **Type** Arcade **Machine** BBC/Electron **Price** £2 99 **Supplier** Bug Byte, Liberty House 222 Regent Street London W1R 7DB

## Spectrum

**Program** *Redhawk* **Type** Adventure **Machine** Spectrum **Price** £8 95 **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston-Upon-Thames, Surrey KT1 4DB

**Program** *The Force* **Type** Strategy **Machine** Spectrum **Price** £8 95 **Supplier** Mind Games Liberty House 222 Regent Street London W1R 7DB

**Program** *Pace Compilation* **Type** Arcade **Machine** Spectrum **Price** £2 95 **Supplier** Pace Software, 40 Bainton Grove, Clifton Nottingham NG11 8LG

**Program** *The Planets* **Type** Arcade **Machine** Spectrum **Price** £9 95 **Supplier** Martech Martech House, Bay Terrance Pevensey Bay East Sussex BN24 6EE

*The Planets* is a program of impressive scope using, it is claimed, over 125K and loaded in several sections I had some doubts about it because it is one of those programs which claims to be simultaneously a state of the art arcade game and of great educational value Usually such programs are poor examples of both types

The educational aspect of *The Planets* is its detailed presentation of the main features of the solar system

The game involves travelling to each of the eight planets in the solar system landing and then finding a capsule each capsule may be unlocked by a code word you are told the first but must discover the others for yourself All this is somehow linked to the playing of a strange alien game and the ultimate salvation of earth

In terms of actual play landing on the planets is really a sort of *Lunar Lander* where you have gravitational pull against thrust power and directional jets to reduce your speed on landing to a safe level

However it s the alien game that had the office hooked – what do you do? What does it mean? Try it.

**Program** *The Price of Magik* **Type** Adventure **Machine** Spectrum **Price** £9 95 **Supplier** Level 9 Computing PO Box 39 Weston-Super-Mare, Avon BS24 9UR

**Program** *Character Designer* **Type** Utility **Machine** Spectrum **Price** £4 50 **Supplier** GAP Software, 17 St John s Terrace London E7 8BX

**Program** *Designer* **Type** Utility **Machine** Spectrum **Price** £8 95 **Supplier** GAP Software 17 St John s Terrace, London E7 8BX

**Program** *Snow Queen* **Type** Adventure **Machine** Spectrum **Price** £9 95 **Supplier** Mosaic Bookware

**Program** *Mantronix* **Type** Arcade **Machine** Spectrum **Price** £7 95 **Supplier** Probe Software 155 Mitcham Road London SW17 3LN

**Program** *Sword and Shield* **Type** Strategy **Machine** Spectrum **Price** £5 95 **Supplier** Black Night Computers PO Box 132 Chiselhurst, Kent BR7 6LJ

## MSX

**Program** *Journey to the Centre of the Earth* **Type** Adventure **Machine** MSX **Price** £2 99 **Supplier** Bug Byte Liberty House 222 Regent Street London W1

## Sharp

**Program** *Pace Compilation* **Type** Arcade **Machine** Sharp MZ700 and Sharp MZ800 **Price** £2 99 **Supplier** Pace Software 40 Bainton Grove, Clifton Nottingham NG11 9LG

## VIC

**Program** *Viva Vic* **Type** Arcade **Machine** Vic 20 **Price** £6 50 **Supplier** Llamasoft 49 Mount Pleasant Tadley Hants

# Charts

## Top Twenty

| | | | |
|---|---|---|---|
| 1 | (2) | Thrust *(C64)* | Firebird |
| 2 | (3) | Spindizzy *(Sp, C64, Ams)* | Electric Dreams |
| 3 | (1) | Batman *(Sp, Ams)* | Ocean |
| 4 | (12) | International Karate *(Sp, C64)* | System 3 |
| 5 | (5) | Formula One Simulator *(Various)* | Mastertronic |
| 6 | (9) | Kik Start *(Sp, C64, C16)* | Mastertronic |
| 7 | (4) | Commando *(Various)* | Elite |
| 8 | (7) | They Sold 2 *(Sp, C64, Ams)* | Hit Squad |
| 9 | (–) | Vegas Jackpot *(Various)* | Mastertronic |
| 10 | (6) | Bomb Jack *(Elite)* | Elite |
| 11 | (8) | Spellbound *(Sp, C64, Ams)* | Mastertronic |
| 12 | (10) | Green Beret *(Sp, C64)* | Imagine |
| 13 | (15) | Way of the Tiger *(Sp Ams, MSX)* | Gremlin |
| 14 | (–) | Quazatron *(Sp)* | Hewson |
| 15 | (–) | Hektik *(Sp, C64, Vic20, C16)* | Mastertronic |
| 16 | (–) | Boundar *(Various)* | Gremlin |
| 17 | (–) | Turbo Esprit *(Sp, Ams)* | Durell |
| 18 | (11) | V *(Sp, C64)* | Ocean |
| 19 | (14) | Superbowl *(Sp, C64, MSX)* | Ocean |
| 20 | (13) | The Last V8 *(C64 Ams Atari)* | Mastertronic |

## Top Tens

All figures compiled by Gallup/Microscope

### Amstrad

| | | | |
|---|---|---|---|
| 1 | (2) | Get Dexter | (PSS) |
| 2 | (7) | Spindizzy | (Electric Dreams) |
| 3 | (1) | Batman | (Ocean) |
| 4 | (–) | Tomahawk | (Digital Int) |
| 5 | (3) | Commando | (Elite) |
| 6 | (6) | They Sold (2) | (Hit Squad) |
| 7 | (9) | Turbo Esprit | (Durell) |
| 8 | (–) | Bomb Jack | (Elite) |
| 9 | (8) | Into Oblivion | (Mastertronic) |
| 10 | (4) | Last V8 | (Mastertronic) |

### Atari

| | | | |
|---|---|---|---|
| 1 | (2) | Vegas Jackpot | (Mastertronic) |
| 2 | (7) | New York City | (Americana) |
| 3 | (8) | Scooter | (Americana) |
| 4 | (1) | The Last V8 | (Mastertronic) |
| 5 | (4) | One Man | (Mastertronic) |
| 6 | (6) | Olies Follies | (Americana) |
| 7 | (3) | Action Biker | (Mastertronic) |
| 8 | (10) | Fighter Pilot | (Digital Int) |
| 9 | (9) | Shamus | (Americana) |
| 10 | (–) | Steve Davis Snooker | (CDS) |

### BBC

| | | | |
|---|---|---|---|
| 1 | (1) | Commando | (Elite) |
| 2 | (3) | Winter Olympics | (Tynesoft) |
| 3 | (2) | Bruce Lee | (US Gold) |
| 4 | (–) | Tennis | (Bug Byte) |
| 5 | (–) | Cosmic Bank Zones | (US Gold) |
| 6 | (8) | Strike Force | (Mirrorsoft) |
| 7 | (–) | Computer Hits (2) | (Beau Jolly) |
| 8 | (6) | Karate Combat | (Superior) |
| 9 | (–) | Mini Office 2 | (Database) |
| 10 | (4) | Moon Cresta | (Incentive) |

### Commodore 64

| | | | |
|---|---|---|---|
| 1 | (1) | Thrust | (Firebird) |
| 2 | (3) | Int Karate | (System 3) |
| 3 | (2) | Spindizzy | (Electric Dreams) |
| 4 | (3) | Form One Sim | (Mastertronic) |
| 5 | (6) | Spellbound | (Mastertronic) |
| 6 | (5) | Bomb Jack | (Elite) |
| 7 | (7) | They Sold (2) | (Hit Squad) |
| 8 | (4) | Psi-5 Trading | (US Gold) |
| 9 | (–) | Breakdance | (Americana) |
| 10 | (–) | Meltdown | (Mastertronic) |

### Spectrum

| | | | |
|---|---|---|---|
| 1 | (1) | Batman | (Ocean) |
| 2 | (2) | Green Beret | (Imagine) |
| 3 | (5) | Quazatron | (Hewson) |
| 4 | (–) | The Planets | (Martech) |
| 5 | (4) | Starstrike 2 | (Realtime) |
| 6 | (3) | Heavy on the Magick | (Gargoyle) |
| 7 | (8) | Way of the Tiger | (Gremlin) |
| 8 | (–) | Shrieking Fireman | (M'tronic) |
| 9 | (–) | Spindizzy | (Electric Dreams) |
| 10 | (–) | Bounder | (Gremlin) |

# NEXT WEEK

*Popular Computing Weekly*, May 29, will be full to brimming with all the news, reviews and features of the moment

### ● All about compilers

What do compilers actually do and would you find one useful? David Ridge explains all, and discusses some currently on the market

### ● Shogun

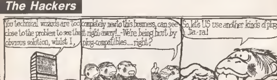
You've read the book, seen the TV series, worn the kimono now you can play the game and read the review

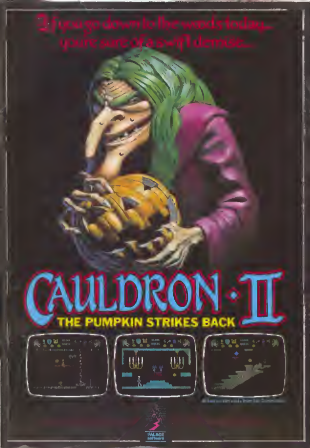
### ● Screen dumps

Spectrum owners can print out their screens double-size with the aid of our simple listing

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## The Hackers




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